Office of the Assistant Superintendent for Educational Services

To: Dr. Mike Riggle
From: Rosanne Williamson
Re: New Course Proposals
Date: January 8, 2014

I am forwarding the new course proposals from Glenbrook North and Glenbrook South administrators. **New course proposals which may require additional FTE will be covered by the building's authorized FTE allocation.**

These courses have been thoroughly discussed in each building by relevant departmental committees, by instructional supervisor curriculum councils, and by building principals. Our ATM has also reviewed these proposals. The Board will note that they seek to meet the academic needs and interests of students in keeping with a comprehensive high school program. Both schools offer a rigorous array of courses which support students' college and career readiness.

I recommend that the Board be presented with these new courses for discussion on Monday, January 13, 2014 and that action on this item would occur no later than the Monday, January 27, 2014 Board meeting.

Building administrators who were closely involved in the development of these proposals will be available at the Board meeting on January 13, 2014 to address questions from the Board.

Board Policy: Curriculum Planning Strategy 7010 (procedures) is included in the packet so that Board members who wish to review our required timelines and forms concerning our process for new course approvals may do so.

Board Policy 7010 and its procedures identifies not only the process for how proposals shall be submitted for Board approval, but also explains what happens after they are implemented as administrators evaluate the success of the change, reporting back to the Board "no later than the end of the third semester that the course is offered." This third semester follow-up evaluation of previously approved new courses will be contained in curriculum reports presented at a future Board meeting.

To: Dr. Mike Riggle, Dr. Rosanne Williamson
From: Kris Frandson, John Finan
cc: Dr. Paul Pryma,
Re: New Course Proposals
Date: November 26th, 2013

The Glenbrook North Instructional Supervisors Team met on Wednesday November 13th, 2013 and agreed to recommend the following new course proposals/curricular changes for your approval. In addition, GBN's Curriculum Council reviewed and approved these proposals on Thursday November 14th, 2013.These courses/changes meet with the approval of the principal and both associate principals. I am also attaching the new course proposal forms for each of these listed below as well as the rationales for course name changes. Please let me know if you have any additional questions.

Department	Course Title	Status	Rationale	Impact on Budget, FTE, Facilities	Evaluation
Career and Life Skills – Applied Technology	Project Lead the Way (PLTW) – Intro to Engineering Design (IED) - Honors level course	New Course – Year long elective offered 2014-15 school year Course was approved last year for GBS.	The addition of PLTW curriculum will fulfill the needs of students looking for advance studies in engineering and technology related courses and career paths. The curriculum provides a rich hands-on, challenge based learning experience that connects to the industry standards.	Staffing for the 2014-15 school year will not be impacted. Teacher training for the course will be $2,500 plus room and board at U of I campuses (Champaign or Chicago) which will be covered by dept./building funding. Other equipment and facilities costs will be covered by Perkins and CTEI grants. GBN has applied for PLTW start-up grant funding as well.	Course survey feedback, student enrollment data, students declaring engineering majors and pass rates on the national PLTW exams will all be evaluated to determine the success of the program.
	PLTW – Principles of Engineering (POE) - Honors level course	New Course – Year long elective offered 2015-16 school year Course was approved last year for GBS	This course will provide opportunities for students to continue their engineering studies. POE will expose students to mechanisms, energy statics, materials and kinematics within the field of engineering.	Staffing for the 2015-16 school year will be dependent upon the enrollment of students in the IED course offered in 2014-15. At this time, we do not anticipate any change to the FTE for the department. If there is a need for increased FTE, it would come from the building allotment of FTE.	Course survey feedback, student enrollment data, students declaring engineering majors and pass rates on the national PLTW exams will all be evaluated to determine the success of the program.

	PLTW – Civil Engineering & Architecture (CEA)	New Course – Year long elective offered 2015-16 school year Joint proposal with GBS	The focus of this course is to expose the student to design and construction practices of residential and commercial building projects. Design teams and teamwork skills are a major focus of the course.	Staffing for the 2015-16 school year will be dependent upon the enrollment of students in the IED course offered in 2014-15. At this time, we do not anticipate any change to the FTE for the department. If there is a need for increased FTE, it would come from the building allotment of FTE.	Course survey feedback, student enrollment data, students declaring engineering or architecture majors and pass rates on the national PLTW exams will all be evaluated to determine the success of the program.
	PLTW - Engineering Design and Development (EDD) Capstone Course for PLTW	New Course – Year long elective offered 2016-17 school year Joint proposal with GBS	EDD is the capstone course for the PLTW coursework. It is an engineering research course in which students work in teams to design and develop original solutions to technical problems.	Staffing for the 2016-17 school year will be dependent upon the enrollment of students in the POE or CEA courses offered in 2015-16	Course survey feedback, student enrollment data, students declaring engineering majors and pass rates on the national PLTW exams will all be evaluated to determine the success of the program.
Business	Consumer Ed Honors 171	Recommend offering this course as an early bird class for 2014-15 in addition to during the regular scheduled day.	Adding an early bird option to this course offering will provide more flexibility in scheduling students who are in honors, academy and AP courses	There will be no impact to the FTE within the department because this is a required course for all senior students. There is also no impact to the budget or facilities.	Student enrollment in this course and ability to better schedule students will be used to evaluate the success of this curricular change.
Science	ELL Earth Science 163	New instructional level of the current year long Earth Science course Grades: 9-12 Credit: 1.0	Currently the science department rotates ELL science classes between Biology and Chemistry. Some students cannot take the Chemistry class due to their math placement. The Earth Science class will now rotate with the biology class and all students can access this lab course.	There will be no impact on FTE within the science department or school since the ELL Earth Science class will replace the ELL Chemistry class. The only budget impact will be a summer curriculum writing project that will be funded out of building resources.	The course will be evaluated in the scheduled evaluation cycle after three semesters to make sure it meets the needs of our ESL students. Student success, student feedback and teacher summaries will be part of the evaluation process.

Social Studies	Advanced Placement European History and Advanced Placement World History	Recommend to expand the enrollment options for both courses to sophomore and senior level students	This proposed change would enable student greater flexibility in timing their social studies courses and capitalizing on their interests. Elective courses in social studies are open to sophomores and seniors and this would make the course selection consistent with current practice.	This change will not impact FTE staffing, facilities or budget. Students will not be allowed to enroll in both courses during the same year. Student enrollment will come from other course offerings within the Social Studies department. A summer curriculum project may be needed and will be funded from building resources.	Student enrollment data, as well as, student and teacher feedback will be used to evaluate the curricular change.
Course Name Changes	**Current Title**	**New Title**	**Rational**		
Mathematics	Adv. Algebra GA 263 Adv. Algebra G 263 Adv. Algebra 263 Adv. Algebra/ Trigonometry 273	Algebra 2 GA 263 Algebra 2 G 263 Algebra 2 263 Algebra 2 273 Honors	To better align with the Common Core State Standards (CCSS) we are recommending the name change to match the title used in CCSS. This title will also match with the course offerings at GBS.	None	N/A
	Precalculus/ Trigonometry 163 College Algebra/ Trigonometry G 163 College Algebra/ Trigonometry GA 163	Precalculus 163 Precalculus G 163 Precalculus GA 163	The new CCSS curriculum has trigonometry concepts and topics taught throughout multiple courses: Geometry, Algebra 2, and Precalculus. These new name changes align better with the course sequences in the CCSS	None	N/A

Removal of Course offerings	**Course**	**Recommended Action**	**Rationale**		
Career and Life Skills – Applied Technology	Plastics 161	Archive course –	Minimal enrollment has not been achieved for the last several years.	None	N/A
Science	Science Projects	Archive course	Minimal enrollment has not been achieved for the last several years	None	N/A

APPLICATION FOR CURRICULAR CHANGE AND COURSE PROPOSAL

School: Glenbrook North Department: Career & Life Skills Applied Technology

Date: October 2013

Name of proposed curricular change: Project Lead the Way (PLTW) Introduction to Engineering Design (honors credit)

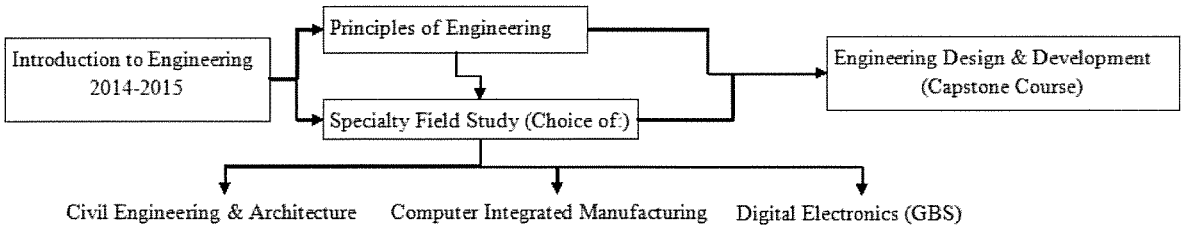
1.**Brief description** of the curricular change

PLTW: Introduction to Engineering Design Grade: 9-12 Length: 2 Sem Credit: Academic & All Subject

The PLTW Pathway to Engineering (PTE) program is a sequence of courses, which follows a proven hands-on, real-world problem-solving approach to learning. Throughout PTE, students learn and apply the design process, acquire strong teamwork and communication proficiency, and develop organizational, critical-thinking, and problem-solving skills. These courses complement traditional mathematics and science courses and prepare students to pursue a post-secondary education and careers in STEM-related fields.

Introduction to Engineering Design (IED) is prerequisite for all PLTW courses and will be offered to 9-12 grade students. The major focus on IED is the design process and its application. Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer's notebook, and communicate solutions to peers and members of the professional community.

Introduction to Engineering Design (IED) and Principles of Engineering (POE) are two PLTW foundation courses. In the 2014-15 school year we would like to offer IED and in the future POE. These two courses are currently running successfully at Glenbrook South. In subsequent years, we would like to implement PLTW specialization courses as well as a capstone course in order to become a certified PLTW school and create opportunities for students to earn college credit. This will complete an entire STEM program of study (see diagram).



2. Curriculum Planning Committee Membership

a) List the members of the committee. Mary Kosirog, Instructional Supervisor Career & Life Skills, Dawn Hall, Instructional Supervisor of Applied Technology, Business and Family & Consumer Sciences—GBS, Mary Rockrohr, Instructional Supervisor Science

and Jason Berg & Jim Howie, Applied Technology teachers.

b) Give the rationale for the membership of this committee.

Mary Kosirog is the Instructional Supervisors of Career & Life Skills. Mary was the Department Chair at Prospect High School when they adopted and implemented Project Lead the Way (Introduction to Engineering and Civil Engineering and Architecture)

Jim Howie and Jason Berg are Applied Technology teachers.

Mary Rockrohr is the Instructional Supervisor for Science.

Dawn Hall is the Instructional Supervisor for Applied Technology, Business, and Family & Consumer Sciences at Glenbrook South.

c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

Sena Cooper, Director of School Engagement, Midwest Region State of Illinois was consulted but did not require any compensation.

3. **Need** for the curricular change:

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

- According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering. Applied Technology offers one engineering course (Principles of Science & Technology), but not a sequence of courses like PLTW.
- Females are underrepresented in our engineering class.
- All area NSERVE high schools offer PLTW courses (New Trier, Niles, Maine Township, Evanston and Glenbrook South) including other area high schools (District 214, District 211, Highland Park, Stevenson and Chicago Math & Science Academy).

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

The PLTW curriculum is founded in the fundamental problem-solving and critical-thinking skills taught in traditional career and technical education (CTE), but at the same time integrates national academic and technical learning standards and STEM principles, creating what U.S. Secretary of Education Arne Duncan calls one of the "great models of the new CTE succeeding all across the country." PLTW was recently cited by the Harvard Graduate School of Education as a "model for 21st century career and technical education."

In 2013, PLTW was named to the Social Impact Exchange's S&I 100 list of the Top 100 Nonprofit Organizations providing widespread impact and great promise of scalability. President and CEO, Dr. Vince Bertram, was invited to testify before the Subcommittee on Research of the U.S. House of Representatives' Committee on Science, Space, and Technology. PLTW was the only curriculum provider invited to attend.

Project Lead The Way is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics education curricular programs used in middle and high schools across the U.S. In 2012 PLTW experienced a record growth of 20% reaching into 4,782 schools in all 50 states and the District of Columbia. PLTW has cultivated partnerships with more than 100 institutions of higher learning to create additional opportunities for our students and teachers. By creating a thriving, robust network, they are able to provide the most cutting-edge, comprehensive STEM education programs, as well as cultivate a larger STEM community. They are committed to improving communication across school districts and states. By sharing creativity, ideas, and knowledge, they create a stronger organization and a more meaningful experience for students, parents, educators, and all those who play a part in making PLTW a success.

According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors than those who do not. (http://www.mnceme.org/796/)

About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they had a clear and confident sense of the types of college majors and jobs they intended to pursue. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)

4. **Rationale** for addressing the need through a curricular change:

a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

There is a gap in the current Applied Technology course offerings at GBN for a Honors/AP level course. There is a need for a course where the curriculum can push the rigor and provide a challenged based learning environment for students.

According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering. We believe the addition of the PLTW program will fulfill the needs of students looking for advanced engineering and technology courses. This program provides college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will

- have an opportunity to earn college credit in PLTW certified schools;
- meet and work with engineers from various industries in the area;
- prepare to pursue a post-secondary education and careers in STEM related fields.

Top paying majors for new college graduates according to Forbes Magazine Online (1/24/13):

- Computer Engineering: $70,400
- Chemical Engineering: $66,400
- Aerospace/Aeronautical/Astronautical Engineering: $64,000
- Mechanical Engineering: $62,900
- Electrical/Electronics and Communication Engineering: $62,300
- Civil Engineering: $57,600

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

N/A

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing IED and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning in a project-based curriculum. This hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas.

5. **Description** of proposed change:

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

Our target group includes our current drafting, manufacturing and engineering students—approximately 80 students. In addition, PLTW should draw additional students on a pathway to a career in engineering by providing an advanced curriculum and sequence of courses. An advantage of PLTW is it will allow these students to begin as freshman and experience specialization courses as juniors and seniors.

The course assumes no previous knowledge, but students must be concurrently enrolled in Geometry 163 or higher and enrolled in a science course.

b) Provide a tentative outline of the proposed course or program.

Introduction to Engineering Design is one of two foundation courses in the Project Lead The Way high school pre-engineering program. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science,

and technology.

The major focus of the IED course is to expose students to design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation.

The course of study includes:

- Design Process
- Modeling
- Sketching
- Measurement, Statistics, and Applied Geometry
- Presentation Design and Delivery
- Engineering Drawing Standards
- CAD Solid Modeling
- Reverse Engineering
- Consumer Product Design Innovation
- Marketing
- Graphic Design
- Engineering Ethics
- Virtual Design Teams

6. **Implications** of the proposed change:

a) What are the implications of this proposed change for staffing, facilities, and budget?

Staffing is not anticipated to change for the 2014-15 school year. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due to a yearly participation fee of $3,000. Our current practice is to purchase the software independently. This fee will provide the school with unlimited software licenses and support for our teachers and students.

Equipment and supplies will be purchased based on student enrollment and the Introduction to Engineering & Design purchase manual guidelines.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help cover costs incurred by the department. In addition, GBN applied for a PLTW startup grant to assist in implementation costs.

b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

We see the course enrollment as a regrouping of students who would have enrolled

in other Applied Technology electives, which may decrease the enrollment in these courses.

We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Teacher training is $2,500 per course plus room and board in Champaign or Chicago (U of I campuses). Counselor and Administrator Training Seminar is required and hosted by University of Illinois, at a cost of $110 per person registration fee plus travel expenses.

7. **Method of evaluating** the success of the proposal after it is implemented:

a) If the proposal is approved and implemented, how shall it be evaluated?

At the conclusion of the 2014-15 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

b) What specific outcomes shall indicate success of the implemented proposal?

Superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in enrollment including an increase in enrollment of females in engineering courses.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook North **Department:** Applied Technology **Date:** October 2013

Name of proposed curricular change: PLTW Principles of Engineering (honors credit)

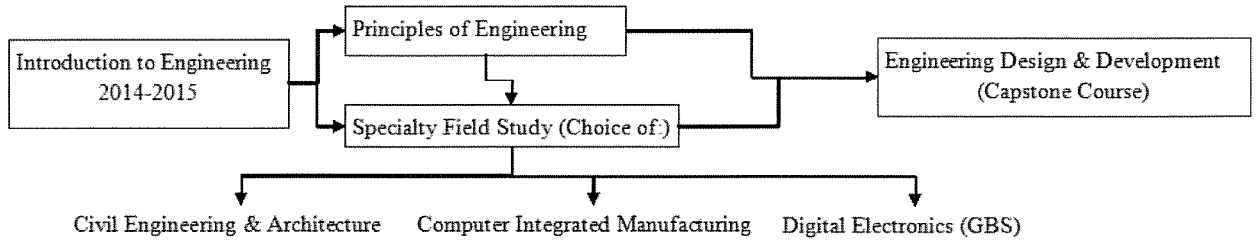
1. **Brief description of the curricular change:**

PLTW: Principles of Engineering Grade: 10-12 Length: 2 Sem Credit: Academic & All Subject

Principles of Engineering (POE) is a Project Lead the Way engineering course designed for 10-12 grade students. The major focus of the POE course is to expose students to major concepts they will encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. PLTW integrates national academic and technical standards and STEM principles while influencing and engaging both males and females to pursue careers in engineering with courses that are project-centered, problem-based and technology-integrated, preparing students to excel in high-tech fields.

Introduction to Engineering Design (IED) and Principles of Engineering (POE) are two PLTW foundation courses. In the 2014-15 school year we would like to offer IED and in 2015-2016 POE. These two courses are currently running successfully at Glenbrook South. In subsequent years, we would like to implement PLTW specialization courses as well as a capstone course in order to become a certified PLTW school and create opportunities for students to earn college credit. This will complete an entire STEM program of study (see diagram).



2. **Curriculum Planning Committee Membership**

a) List the members of the committee.

Mary Kosirog is the Instructional Supervisors of Career & Life Skills. Mary was the

Department Chair at Prospect High School when they adopted and implemented Project Lead the Way (Introduction to Engineering and Civil Engineering and Architecture)

Jim Howie and Jason Berg are Applied Technology teachers.

Mary Rockrohr is the Instructional Supervisor for Science.

Dawn Hall is the Instructional Supervisor for Applied Technology, Business, and Family & Consumer Sciences at GBS.

b) Give the rationale for the membership of this committee.

Mary Kosirog is the Instructional Supervisors of Career & Life Skills. Mary was the Department Chair at Prospect High School when they adopted and implemented Project Lead the Way (Introduction to Engineering and Civil Engineering and Architecture)

Jim Howie and Jason Berg are Applied Technology teachers.

Mary Rockrohr is the Instructional Supervisor for Science.

Dawn Hall is the Instructional Supervisor for Applied Technology, Business, and Family & Consumer Sciences at Glenbrook South.

b) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

The following individuals have been consulted but do not require compensation.

Sena Cooper, Director of School Engagement, Midwest Region State of Illinois was consulted but did not require any compensation.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

- According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering. Applied Technology offers one engineering course (Principles of Science & Technology), but not a sequence of courses like PLTW.
- Females are underrepresented in our engineering class.
- All area NSERVE high schools offer PLTW courses (New Trier, Niles, Maine Township, Evanston and Glenbrook South) including other area high schools

(District 214, District 211, Highland Park, Stevenson and Chicago Math & Science Academy).

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

The PLTW curriculum is founded in the fundamental problem-solving and critical-thinking skills taught in traditional career and technical education (CTE), but at the same time integrates national academic and technical learning standards and STEM principles, creating what U.S. Secretary of Education Arne Duncan calls one of the "great models of the new CTE succeeding all across the country." PLTW was recently cited by the Harvard Graduate School of Education as a "model for 21st century career and technical education."

In 2013, PLTW was named to the Social Impact Exchange's S&I 100 list of the Top 100 Nonprofit Organizations providing widespread impact and great promise of scalability. President and CEO, Dr. Vince Bertram, was invited to testify before the Subcommittee on Research of the U.S. House of Representatives' Committee on Science, Space, and Technology. PLTW was the only curriculum provider invited to attend.

Project Lead The Way is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics education curricular programs used in middle and high schools across the U.S. In 2012 PLTW experienced a record growth of 20% reaching into 4,782 schools in all 50 states and the District of Columbia. PLTW has cultivated partnerships with more than 100 institutions of higher learning to create additional opportunities for our students and teachers. By creating a thriving, robust network, they are able to provide the most cutting-edge, comprehensive STEM education programs, as well as cultivate a larger STEM community. They are committed to improving communication across school districts and states. By sharing creativity, ideas, and knowledge, they create a stronger organization and a more meaningful experience for students, parents, educators, and all those who play a part in making PLTW a success.

According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors than those who do not. (http://www.mnceme.org/796/)

About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they had a clear and confident sense of the types of college majors and jobs they intended to pursue. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences

significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)

4. **Rationale for addressing the need through a curricular change:**

a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

There is a gap in the current Applied Technology course offerings at GBN for a Honors/AP level course. There is a need for a course where the curriculum can push the rigor and provide a challenged based learning environment for students.

According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering. We believe the addition of the PLTW program will fulfill the needs of students looking for advanced engineering and technology courses. This program provides college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will

- have an opportunity to earn college credit in PLTW certified schools;
- meet and work with engineers from various industries in the area;
- prepare to pursue a post-secondary education and careers in STEM related fields.

Top paying majors for new college graduates according to Forbes Magazine Online (1/24/13):

- Computer Engineering: $70,400
- Chemical Engineering: $66,400
- Aerospace/Aeronautical/Astronautical Engineering: $64,000
- Mechanical Engineering: $62,900
- Electrical/Electronics and Communication Engineering: $62,300
- Civil Engineering: $57,600

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

N/A

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing POE and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning in a project-based curriculum. This hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas.

5. **Description of proposed change:**

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

Our target group will be students who have successfully completed Introduction to Engineering (IED) and be concurrently enrolled in college preparatory mathematics and science courses.

b) Provide a tentative outline of the proposed course or program.

Principles of Engineering is one of two foundation courses in the Project Lead the Way high school pre-engineering program. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

The major focus of POE is to expose students to mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

The course of study includes:

- Mechanisms
- Energy Sources
- Energy Applications
- Machine Control
- Fluid Power
- Statics
- Material Properties
- Material Testing
- Statistics
- Kinematics

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

Staffing is not anticipated to change for the 2015-16 school year, however will change given growth. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due

to a yearly participation fee of $3,000 through PLTW that is significantly lower than purchasing the software program independently, which is our current practice. This fee provides the school with unlimited software licenses and support for our teachers and students.

Equipment and supplies will be purchased based on student enrollment and the Principles of Engineering purchase manual guidelines.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help cover costs incurred by the department. In addition, GBN applied for a PLTW startup grant to assist in implementation costs.

b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

We see the course enrollment as a regrouping of students who would have enrolled in other Applied Technology electives, which may decrease the enrollment in these courses.

We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Teacher training is $2,500 per course plus room and board in Champaign or Chicago (U of I campuses). Counselor and Administrator Training Seminar is required and hosted by University of Illinois, at a cost of $110 per person registration fee plus travel expenses.

7. **Method of evaluating the success of the proposal after it is implemented:**

a) If the proposal is approved and implemented, how shall it be evaluated?

At the conclusion of the 2015-16 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

b) What specific outcomes shall indicate success of the implemented proposal?

Superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in enrollment including an increase in enrollment of females in engineering courses.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook South/Glenbrook North **Department:** Applied Technology **Date:** 10/20/13

Name of proposed curricular change: PLTW Civil Engineering Architecture (honors level)

1. **Brief description of the curricular change:**

PLTW Civil Engineering Architecture Grade: 10, 11, 12th Length: Yearlong

Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. In addition, students use 3D design software to design and document solutions for major course projects. Students communicate and present solutions to their peers and members of a professional community of engineers and architects. This course will follow PLTW Introduction to Engineering Design for students interested in architecture.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. PLTW integrates national academic and technical standards and STEM principals while influencing and engaging both males and females to pursue careers in engineering with courses that are project-centered, problem-based and technology-integrated, preparing students to excel in high-tech fields.

2. **Curriculum Planning Committee Membership**

a) List the members of the committee.

Teachers: Michael Sinde, Dara Randerson, Steve Silca
Instructional Supervisors: Dawn Hall, Mary Kosirog
PLTW: Brenda Pacey, Sena Cooper
GBS Consulting Team: Jeff Rylander
Additional Teacher Consultants: Bill Christian, Ken Albert, Eric LeBlanc

b) Give the rationale for the membership of this committee.

Michael Sinde is an applied technology teacher proposing curricular change and was one of ten original pilot teachers in the State of Illinois to start PLTW. Dara Randerson is a PLTW master teacher, a former engineer, and current applied technology PLTW teacher at GBS.

Dawn Hall is the Instructional Supervisor of Applied Technology, Business Education & Family and Consumer Science department at Glenbrook South and Mary Kosirog is the Instructional Supervisor of the Career and Life Skills department at Glenbrook North.

Jeff Rylander is the Instructional Supervisor for the GBS Science Department.

b) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

The following individuals have been consulted but do not require compensation.

Brenda Pacey is the Illinois Project Lead the Way Affiliate Director.

Sena Cooper is the Project Lead the Way Director of School Engagement, Midwest Region.

Bill Christian is an Introduction to Engineering Design Master Teacher for the State of Illinois and teaches at Thornton Township High School.

Ken Albert is a Project Lead the Way Master Teacher and started PLTW at Niles North High School.

Eric LeBlanc is a Project Lead the Way Teacher and started PLTW in District 211.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

- 2013-14 inaugural PLTW enrollments of over 200 students demonstrates an extremely high demand for the PLTW course offerings.
- Need to create programs of study to better serve students. Maintain CAD sequence at regular level. Maintain pre-engineering PLTW sequences at honors level and eliminate the need to stack courses of different levels, which has been the practice.
- Females are underrepresented in our engineering courses.

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

PLTW is the largest non-profit provider of innovative and rigorous STEM education programs. More than 4,700 schools and 400,000 students in all 50 states and the District of Columbia are engaged in PLTW courses.

This growth is possible because PLTW programs are effective and engaging. From students in the classroom to parents and volunteers, school principals, and educators, PLTW has inspired thousands of people to take part in improving our schools and advancing their curricula.

Project Lead the Way (PLTW) has been nationally recognized as one of just four high-quality STEM programs that are immediately scalable on a national level. Of the four programs selected, PLTW is the only in-school STEM curricular program for elementary, middle, and high school

students and the only program offering a comprehensive professional development model for teachers. *Press Release*: *October 3, 2013*

More than 10,500 teachers and 8,000 high school counselors have undergone advanced training with PLTW. Our network includes 500 Core Training Instructors who are among the best and brightest STEM educators in the country.

PLTW Gets Results

- PLTW is a "**model for 21st century career and technical education**" – Harvard Graduate School of Education
- According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that **students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors** than those who do not. http://www.mnceme.org/796/
- 92% of high school seniors who are taking PLTW courses intend to pursue a four-year degree or higher, 51% intend to pursue a graduate degree, and 70% intend to study engineering, technology, or computer science. By comparison, 67% of all beginning postsecondary students intended to pursue a bachelor's degree or higher as reported by the National Center for Education Statistics. (True Outcomes – 2009)
- About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they **had a clear and confident sense of the types of college majors and jobs they intended to pursue**. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)
- College students, who took PLTW courses in high school, **study engineering and technology at 5 to 10 times the rate of those students who did not take PLTW** courses in high school and also have higher retention rates in their fields of study.
- Retention in college engineering programs is extremely low at 50% on average, while PLTW students have much higher rates of retention. For example, PLTW students at the Milwaukee School of Engineering have 100% retention.
- The average freshman GPA total for Milwaukee School of Engineering in 2007 was 2.85; the average GPA for PLTW freshman students in 2007 was 3.03. (Milwaukee School of Engineering 2008 Report)

4. **Rationale for addressing the need through a curricular change:**
   a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

PLTW promotes critical thinking, creativity, innovation and real-world problem solving skills in students. This will provide a college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will:

- have an opportunity to earn college credit in PLTW certified schools
- meet and work with engineers from various industries in the area
- prepare to pursue a post-secondary education and careers in STEM-related fields

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

Alternative: Engineering by Design
Engineering by Design does not articulate with colleges and is not as nationally recognized.

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing Civil Engineering and Architecture and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning, in a project-based curriculum. The hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas.

5. **Description of proposed change:**

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

Glenbrook South:
Students who have expressed an interest in architecture or STEM-related careers, and the advantage of PLTW is it will allow these students who started as freshman to experience specialization courses as sophomores, juniors and seniors. Target Group will include our current introduction to engineering or principles of engineering students – over 200 students during the 2013-14 school year. In addition, PLTW should draw additional students on a pathway to a career in STEM-related fields by providing a rigorous curriculum.

The course assumes previous coursework in one or both of the PLTW foundation courses, and students should be concurrently enrolled in college preparatory mathematics and science.

Glenbrook North: Our target group will be students who have successfully completed Introduction to Engineering Design (IED), have an interest in architecture and be concurrently enrolled in college preparatory mathematics and science courses.

b) Provide a tentative outline of the proposed course or program.

Civil Engineering and Architecture is the study of the design and construction of residential and commercial building projects. The course includes an introduction to many of the varied factors involved in building and site design and construction including building components and systems, structural design, storm water management, site design, utilities and services, cost estimation, energy efficiency, and careers in the design and construction industry.

The major focus of the CEA course is to expose students to the design and construction practices of residential and commercial building projects, design teams and teamwork, communication methods, building codes and ordinances, engineering design calculations, and technical documentation. Problem solving skills and design experience are gained through an activity-project-problem-based (APPB) teaching and learning pedagogy. Used in combination with a teaming approach, APPB-learning challenges students to continually hone their interpersonal skills and creative abilities while applying math, science, and technology knowledge learned in other courses to solve design problems and communicate their solutions.

Students will use industry standard 3D architectural modeling software to facilitate site and building design and technical documentation. As the course progresses and the complexity of the design problems increase, students will learn more advanced computer modeling skills as they become more independent in their learning, more professional in their collaboration and communication, and more experienced in problem solving and design.

Civil Engineering and Architecture is a high school level course that is appropriate for 10th, 11th, 12th grade students interested in careers related to civil engineering and architecture. No previous knowledge is assumed, but students should be concurrently enrolled in college preparatory mathematics and science courses in order to facilitate the use and understanding of appropriate math and science concepts necessary for the successful completion of CEA coursework.

The course of study includes:

- Overview of Civil Engineering and Architecture
    - History of Civil Engineering and Architecture
    - Careers in Civil Engineering and Architecture
- Residential Design
    - Building Design and Construction practices
    - Cost estimates
    - Energy efficiency
    - Storm water analysis
    - Water supply
    - Plumbing
    - Electrical systems
    - Wastewater management
- Commercial Applications
    - Commercial Buildings
    - Structural Design
    - Services and Utilities
    - Site Considerations
- Commercial Building Design
    - Commercial Building Design Project
    - Commercial Building Design Presentation

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

Glenbrook South:
Staffing is not anticipated to change for the 2014-15 school year; however it may change given growth. Facilities we will utilize will include the fabrication lab and existing equipment, which will reduce implementation costs. We also anticipate a savings on AutoDesk software thru PLTW.

Equipment and supplies will be purchased based on student enrollment and the CEA purchase manual guidelines.

Marketing and promotion for introduction of Civil Engineering and Architecture to students, parents and community members.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the district.

Glenbrook North:
Depending on the PLTW enrollment in the 2014-2015 school year this course may be offered in the 2015-2016 school year. We do not anticipate a change in staffing or significant implications for other departments other than enhancements to student understandings of math and science concepts through application.

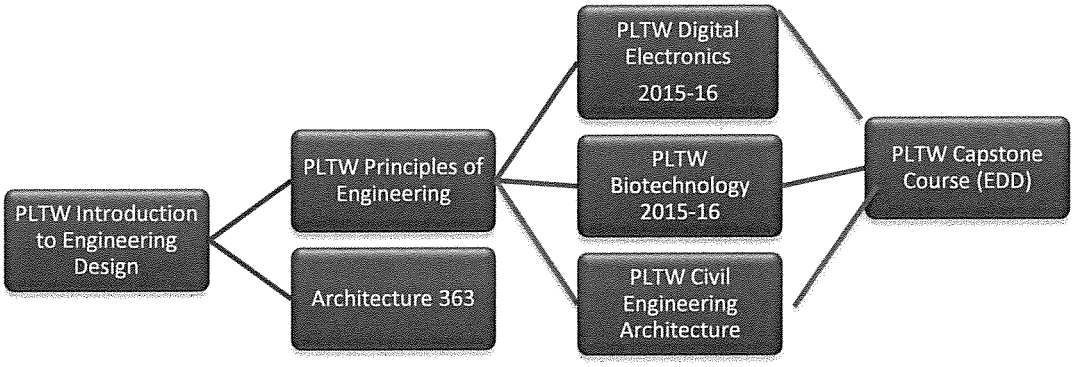
Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due to a yearly participation fee of $3,000. With this fee, the school receives unlimited software licenses and support for our teachers and students.

Equipment and supplies will be purchased based on student enrollment and the Civil Engineering and Architecture purchase manual guidelines.

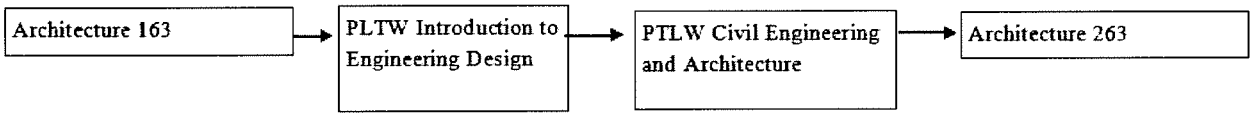
NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the department. In addition, GBN applied for a PLTW startup grant to assist in implementation costs.

b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

Glenbrook South:
The proposed change is part of the overall vision of the applied technology department to implement an entire STEM program of study by substituting PLTW courses and revised upper level architecture courses for the previous engineering and architecture course sequences. In subsequent years, the applied technology department would like to implement PLTW specialization courses based on enrollment and student interest.



Glenbrook North:
Since we are a year behind Glenbrook South in the implementation of PLTW, we need to analyze student interest to determine the sequence of additional PLTW courses. Below is a proposed course sequence in the architecture career pathway.



c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Glenbrook South:
Equipment and supplies will be purchased in preparation based on student enrollment and the Civil Engineering & Architecture purchase manual guidelines.

Marketing and promotion for PLTW Civil Engineering & Architecture to students, parents and community members.

Summer curriculum proposal to review and align our current Architecture 363 course with Introduction to Engineering Design, and Civil Engineering Architecture.

Glenbrook North may have to train a teacher at the cost of $2,500 per course plus room and board in Champaign or Chicago (U of I campuses).

7. **Method of evaluating the success of the proposal after it is implemented:**

a) If the proposal is approved and implemented, how shall it be evaluated?

Glenbrook South:
Evaluations will include student surveys, enrollment data including females, PLTW student test scores on PSAE, and number of students declaring engineering majors. Students participating in PLTW courses take several exams, and student scores will be evaluated. At the conclusion of the 2014-15 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors, and student PSAE scores overall and in science and math. Based on these evaluation measures, course team will make recommendations for curricular changes.

Glenbrook North:
At the conclusion of the 2015-16 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring architecture and engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

b) What specific outcomes shall indicate success of the implemented proposal?

Superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in enrollment including increase in enrollment of females in engineering course.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook South and Glenbrook North **Department:** Applied Technology **Date:** 10/20/13

Name of proposed curricular change: PLTW Engineering Design and Development (honors level)

1. **Brief description of the curricular change:**

PLTW Engineering Design & Development Grade: 11, 12th Length: Yearlong

In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present and defend their original solution to an outside panel. This course is appropriate for 11th and 12th grade students.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. PLTW integrates national academic and technical standards and STEM principals while influencing and engaging both males and females to pursue careers in engineering with courses that are project-centered, problem-based and technology-integrated, preparing students to excel in high-tech fields.

2. **Curriculum Planning Committee Membership**

a) List the members of the committee.

GBS Teachers: Michael Sinde, Dara Randerson
Instructional Supervisors: Dawn Hall, Mary Kosirog
PLTW: Brenda Pacey, Sena Cooper
GBS Consulting Team: Jeff Rylander, Neil Schmidgall, and Mike Stancik
Additional Teacher Consultants: Bill Christian, Ken Albert, Eric LeBlanc

b) Give the rationale for the membership of this committee.

Michael Sinde is an applied technology teacher proposing curricular change and was 1 of 10 original pilot teachers in the State of Illinois to start PLTW. Dara Randerson is a PLTW master teacher, a former engineer, and current PLTW teacher at GBS.

Dawn Hall is the Instructional Supervisor of Applied Technology, Business Education & Family and Consumer Science department at Glenbrook South. Mary Kosirog is the Instructional Supervisor for Career and Life Skills at Glenbrook North.

Jeff Rylander is the Instructional Supervisor for Science Department.

Neil Schmidgall is co-sponsor of the Engineering Club and teaches engineering physics. Mr. Schmidgall is also a former mechanical engineer.

Mike Stancik is co-sponsor of the Engineering Club and teaches engineering physics. Mr. Stancik is also a former electrical engineer.

c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

The following individuals have been consulted but do not require compensation.

Brenda Pacey is the Illinois Project Lead the Way Affiliate Director.

Sena Cooper is the Project Lead the Way Director of School Engagement, Midwest Region.

Bill Christian is an Introduction to Engineering Design Master Teacher for the State of Illinois and teaches at Thornton Township High School.

Ken Albert is a Project Lead the Way Master Teacher and started PLTW at Niles North High School.

Eric LeBlanc is a Project Lead the Way Teacher and started PLTW in District 211.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

Glenbrook South:

- 2013-14 inaugural PLTW enrollments of over 200 students demonstrates an extremely high demand for the PLTW course offerings.
- Need to create programs of study to better serve students. Maintain CAD sequence at regular level. Maintain pre-engineering PLTW sequences at honors level and eliminate the need to stack courses of different levels, which has been the practice.
- Females are underrepresented in our engineering courses.

Glenbrook North:

- According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering.
- Need to create programs of study to better serve students. Applied Technology offers one engineering course (Principles of Science & Technology), but not a sequence of courses like PLTW.
- Females are underrepresented in our engineering class.

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

PLTW is the largest non-profit provider of innovative and rigorous STEM education programs. More than 4,700 schools and 400,000 students in all 50 states and the District of Columbia are engaged in PLTW courses.

This growth is possible because PLTW programs are effective and engaging. From students in the classroom to parents and volunteers, school principals, and educators, PLTW has inspired thousands of people to take part in improving our schools and advancing their curricula.

Project Lead The Way (PLTW) has been nationally recognized as one of just four high-quality STEM programs that are immediately scalable on a national level. Of the four programs selected, PLTW is the only in-school STEM curricular program for elementary, middle, and high school students and the only program offering a comprehensive professional development model for teachers. *Press Release*: *October 3, 2013*

More than 10,500 teachers and 8,000 high school counselors have undergone advanced training with PLTW. Our network includes 500 Core Training Instructors who are among the best and brightest STEM educators in the country.

PLTW Gets Results

- According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that **students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors** than those who do not. http://www.mnceme.org/796/
- 92% of high school seniors who are taking PLTW courses intend to pursue a four-year degree or higher, 51% intend to pursue a graduate degree, and 70% intend to study engineering, technology, or computer science. By comparison, 67% of all beginning postsecondary students intended to pursue a bachelor's degree or higher as reported by the National Center for Education Statistics. (True Outcomes – 2009)
- About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they **had a clear and confident sense of the types of college majors and jobs they intended to pursue**. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)
- College students, who took PLTW courses in high school, **study engineering and technology at 5 to 10 times the rate of those students who did not take PLTW** courses in high school and also have higher retention rates in their fields of study.

- Retention in college engineering programs is extremely low at 50% on average, while PLTW students have much higher rates of retention. For example, **PLTW students at the Milwaukee School of Engineering have 100% retention**.
- The average freshman GPA total for Milwaukee School of Engineering in 2007 was 2.85; the average GPA for PLTW freshman students in 2007 was 3.03. (Milwaukee School of Engineering 2008 Report)

4. **Rationale for addressing the need through a curricular change:**

a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

PLTW promotes critical thinking, creativity, innovation and real-world problem solving skills in students. This will provide a college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will:

- have an opportunity to earn college credit in PLTW certified schools
- meet and work with engineers from various industries in the area
- prepare to pursue a post-secondary education and careers in STEM-related fields

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

Alternative: Engineering by Design
Engineering by Design does not articulate with colleges and is not as nationally recognized.

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing Engineering Design and Development and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning, in a project-based curriculum. The hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas. As a capstone course, EDD will also provide an opportunity for students to apply the skills they've acquired in their PLTW courses.

5. **Description of proposed change:**

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

<u>Glenbrook South:</u>
The change has been designed for students who have expressed an interest in architecture or STEM-related careers. The advantage of PLTW is it will allow these students who started as freshman to experience specialization courses as sophomores, juniors and seniors. Target Group will include our current Introduction to Engineering Design or Principles of Engineering students – over 200 students during the 2013-14 school year. In addition, PLTW should draw additional

students on a pathway to a career in STEM-related fields by providing a rigorous curriculum.

The course assumes previous completion of at a minimum the two PLTW foundation courses, and students should be concurrently enrolled in college preparatory mathematics and science.

Glenbrook North:
Our target group will be students who have successfully completed Introduction to Engineering Design (IED), one other PLTW course and be concurrently enrolled in college preparatory mathematics and science courses.

b) Provide a tentative outline of the proposed course or program.

Engineering Design and Development (EDD) is the capstone course in the PLTW high school engineering program. It is an engineering research course in which students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

Students will perform research to choose, validate, and justify a technical problem, and eliminate one of the "Don't you hate it when...?" statements of the world. After carefully defining the problem, teams of students will design, build, and test their solution. The use of 3D design software and printers allows students to create prototypes and work through the revision process. Finally, student teams will present and defend their original solution to a panel of outside reviewers. While progressing through the engineering design process, students will work closely with experts and will continually hone their organizational, communication and interpersonal skills, their creative and problem solving abilities, and their understanding of the design process and product life cycle. Finally, skills in time management and collaboration as part of a team are developed, culminating in a valuable skill set for the future.

Engineering Design and Development is a high school level course that is appropriate for 11th and 12th grade students. Since the projects on which students work can vary with student interest and the curriculum focuses on problem solving, EDD is appropriate for students who are interested in any technical career path. EDD should be taken as the final capstone PLTW course since it requires application of the knowledge and skills from the PLTW foundation courses.

The course of study includes:

- Design Process
- Intellectual Property
- Research
- Problem Identification, Validation, and Justification
- Teamwork
- Project Management
- Design Specifications
- Concept Sketching
- Design Proposal
- Virtual Solutions
- Building a Prototype
- Testing a Prototype

- Test Evaluation and Refinement
- Documentation
- Presenting the Process and Results

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

Glenbrook South:
Staffing is not anticipated to change for the 2014-15 school year, however it may change given growth. Facilities we will utilize will include the fabrication lab and existing equipment, which will reduce implementation costs. We also anticipate a savings of software costs due to a yearly participation fee of $3,000 that covers all software licenses and support for an unlimited number of students/seats.

Counselor and Administrator Training Seminar is required yearly and hosted by University of Illinois, at a cost of $100 per person registration fee. In addition, travel expenses will be incurred.

No additional resources in personnel. Current teacher's attended curriculum update training at $100 registration.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the district.

Glenbrook North:
Staffing is not anticipated to change for the 2016-17 school year, however may change given growth in the program. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due to a yearly participation fee of $3,000. With this fee, the school receives unlimited software licenses and support for our teachers and students.

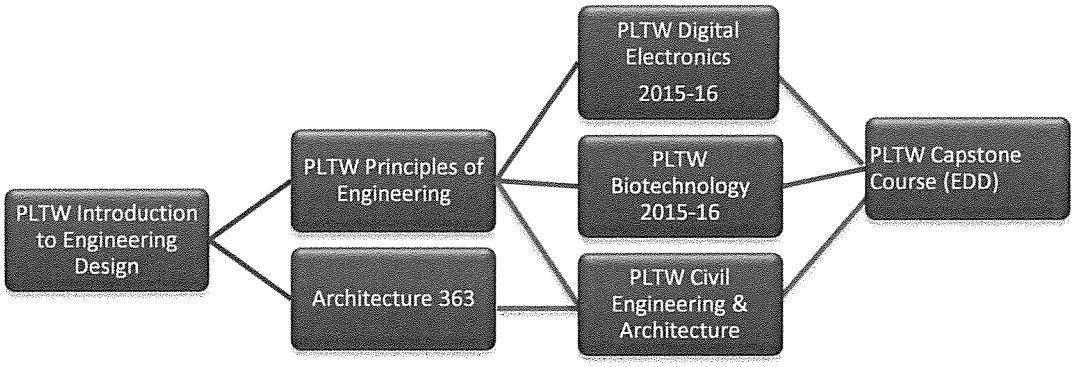
Equipment and supplies will be purchased based on student enrollment and the Engineering Design and Development (EDD) purchase manual.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the department. In addition, GBN applied for a PLTW startup grant to offset implementation costs.

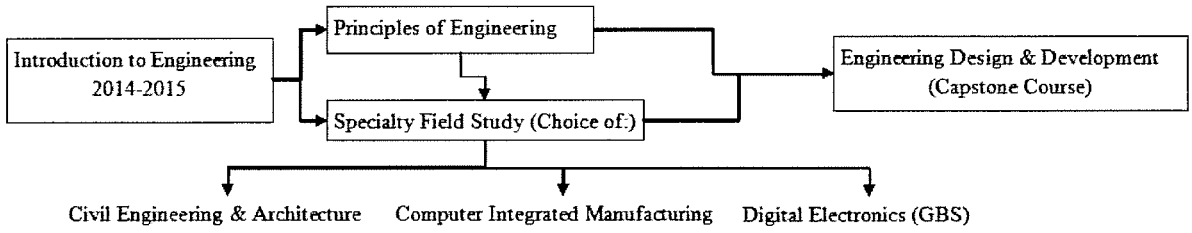
b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

Glenbrook South:
Engineering Design and Development (EDD) will replace Engineering Design and Fabrication 363 and 463, and will not add to the number of course offerings. The proposed change is part of

the overall vision of the applied technology department to implement an entire STEM program of study by substituting PLTW courses and revised upper level architecture courses for the previous engineering and architecture course sequences. In subsequent years, the Applied Technology department would like to implement PLTW specialization courses based on enrollment and student interest. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.



Glenbrook North:
Since we are a year behind Glenbrook South in the implementation of PLTW, we need to analyze student interest to determine the order of additional PLTW courses. Below is a proposed Project Lead the Way course sequence.



c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Glenbrook South:
Equipment and supplies will be purchased in preparation based on student enrollment and the Engineering Design and Development purchase manual guidelines.

Marketing materials and promotion for PLTW Engineering Design and Development to students, parents and community members.

Glenbrook North may have to train a teacher at the cost of $2,500 per course plus room and board in Champaign or Chicago (U of I campuses).

7. **Method of evaluating the success of the proposal after it is implemented:**

a) If the proposal is approved and implemented, how shall it be evaluated?

Glenbrook South:
Evaluations will include student surveys, enrollment data including females, PLTW student test scores on PSAE, and number of students declaring engineering majors. Students participating in PLTW courses take a national standardized exam, and student scores will be evaluated. At the conclusion of the 2014-15 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors, and student PSAE scores overall and in science and math. Based on these evaluation measures, course team will make recommendations for curricular changes.

Glenbrook North:
At the conclusion of the 2016-17 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

b) What specific outcomes shall indicate success of the implemented proposal?

Success of the implementation will be based upon superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in overall enrollment (including increase in enrollment of females) in engineering course. In addition, a unique outcome for this capstone course will be successful industry partnerships and completed projects to valid open-ended technical problems by applying the engineering design process.

Course/Curricular Change Proposal

School: Glenbrook North
Department: Career & Life Skills

Applied Technology

Name of proposed curricular change: Plastics 161

- Archive Plastics 161 due to low enrollment

Business Department

Name of proposed curricular change: Consumer Ed Honors 171

Offer Consumer Education Honors 171 as an early bird class, as well as during the day.

- More opportunities for honor, AP, academy and peer group students to enroll in course
- Seniors who want to take this course end up conflicting out due to advanced placement courses they take their senior year
- Create more flexibility in schedule and will allow students to have an SRT during the day

New Course Proposals:

- Applied Technology
    - PLTW: Introduction to Engineering & Design (IED)
        - Offered 2014-2015
    - Future courses anticipated to offer dependent on enrollment and student interest
        - PLTW: Principles of Engineering (POE)
        - PLTW: Civil Engineering & Architecture (CEA)
        - PLTW: Engineering Design & Development (EDD)

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook North Department: Social Studies Date: November 1, 2013

Name of proposed curricular change:
Open the enrollment of AP European History to seniors and AP World History to sophomores.

1. **Brief description of the curricular change**:
   The Social Studies Department would like allow seniors to take AP European History and sophomores to take AP World History. At present, AP European History is open only to sophomores, and AP World History is open only to seniors. We believe this change will create greater flexibility for students in planning their four years at Glenbrook North. In making this change, students would be prohibited from taking these two classes within the same year.

2. **Curriculum Planning Committee Membership**

   a) List the members of the committee.
   Jamie Ellinger-Macon, Robin Sheperd, and Scott Williams.

   b) Give the rationale for the membership of this committee.
   Jamie Ellinger-Macon has taught AP European History in the department. Scott Williams is the AP World History teacher. Robin Sheperd is the Social Studies Instructional Supervisor. The entire department also provided input on this proposal.

   c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.
   Social Studies Department Chairs from area schools were consulted on their AP offerings.

3. **Need** for the curricular change:

   a) Present and analyze data on student learning that point to a need for change.
   N/A

   b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

   When we began offering AP World History in 2003, we introduced it as a senior class. At the time, it was a brand new and unknown offering from the College Board, and our department felt that only seniors would be adequately prepared for the rigor. When that course was brought on, the department simultaneously shifted AP European History from a senior to a sophomore course. We did not want to crowd

our senior offerings any further (we already offer AP Psychology and AP Government/Politics to seniors only), and felt that interested sophomores were adequately prepared for AP European History if they had earned a department recommendation. While we have seen fairly steady enrollment in AP European History (averaging two sections each year), AP World History has enrolled only one section, and there have been two years in which the course did not have sufficient enrollment to run. Additionally, in the years with one section, several students who had registered for the class have had scheduling conflicts that prohibited them from taking it, decreasing actual enrollment slightly. Students report that they are very much interested in the course, but they are generally choosing only one social studies course in their senior year, and our AP offerings are quite crowded, as stated above.

The proposed change would enable students greater flexibility in timing their social studies courses and capitalizing on their interests. Mr. Williams, who has taught the course for 10 years now, and has been a reader on the exam for the College Board for seven of those years, believes the course is indeed appropriate for sophomores, as do many of the schools in the area, who currently enroll sophomores (more detail below). For the both AP European History and AP World History, the prerequisite and key foundation is our History of World Civilizations course. This survey course provides a strong background through its chronological approach to history. AP European History offers a deeper, richer understanding of Europe from the Renaissance to today. It is taught as a systematic analysis and evaluation of modern European History and its various social, political, religious, intellectual, technological and economic advancements over time. AP World History approaches the history of the world globally and thematically, providing the big picture of human history and emphasizing interactions across cultures rather than honing in upon a single world region.

Based on our survey, the majority of schools in our area offer AP European History, and many offer AP World as well. Twenty five of 26 department chairs that responded to our survey stated that they offer AP European History. There is no simple answer as the when they offer this course, as that varied greatly by school. However, 17 of those reported that their AP European History offering is open to multiple grade levels. Many of those allow sophomores through seniors, and five of those enroll sophomores and seniors together, as we are proposing.

Twelve of the 26 departments offer AP World History. Of those, we are currently the only department that offers AP World History exclusively to seniors. Four schools offer the class at the 9^{th} grade level, three at 10^{th} grade level, and four schools offer it to multiple grade levels.

We are proposing that both AP European History and AP World be offered at both sophomore and senior levels. At GBN, the Social Studies Department has grown very accustomed to structuring classes for the sophomore and senior population. Ten semester electives are offered in this manner, as is AP Macroeconomics. This set up enables students to focus on US History in their junior year, and to explore options throughout the building both sophomore and senior year. Ms. Ellinger-Macon and

Mr. Williams can tap into the expertise of their colleagues in making any necessary revisions to their curricula in light of the make-up of the class. They also can consult with teachers in the area who are currently teaching AP World and AP European History to the sophomore and senior populations.

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.
N/A

4. **Rationale** for addressing the need through a curricular change:

a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.
Offering the two courses to a broader audience will meet the needs described above.

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.
N/A

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.
The change will allow for greater flexibility among students as they select their courses for sophomore and senior years within social studies and throughout the building.

5. **Implications** of the proposed change:

a) What are the implications of this proposed change for staffing, facilities, and budget?
This change should not impact staffing, facilities or the budget. Any small curriculum project resulting from the change (see item c below) will come from the building's summer curriculum allocation.

b) What are the implications of this proposed change for other courses in the department and for other departments in the school?
The change will affect the social studies department exclusively. Because students can't enroll in AP European History and AP World at the same time, the change will not lead to students taking an additional social studies course during their sophomore and senior year. Students' choices will likely affect other social studies courses, most notably Comparative Global Issues, an honors semester elective in which sophomores and seniors enroll. Again, this is simply a course offering adjustment as it pertains to *when* the student would be allowed to take the course(s), not an additional course offering that could reduce enrollment in other departments.

c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?
A small curriculum project would enable adaptations for the new composition of the classes (no more than 20 hours, 10 per teacher).

6. **Method of evaluating** the success of the proposal after it is implemented:

a) If the proposal is approved and implemented, how shall it be evaluated?
We will review enrollment data, teacher and student feedback.

b) What specific outcomes shall indicate success of the implemented proposal?
Success would be indicated through the broader audience (10^{th} and 12^{th} graders) enrolled in the sections of AP European History and AP World History. Success will also be indicated by successful course curriculum implementation for this audience in each class. Quite simply, we expect to hear from students and families that the change has created greater flexibility in scheduling their four years at GBN.

To: Dr. Michael Riggle; Dr. Rosanne Williamson
From: Cameron Muir
Cc: Dr. Brian Wegley
Re: New Course Proposals
Date: December 2, 2013

The Glenbrook South Administration, with the approval of the Instructional Supervisors Council, recommends the following new course proposals for approval. I am also attaching the new course proposal forms for the course.

Department	Course Title	Status	Rationale	Impact
Applied Technology	*PLTW* Civil Engineering Architecture (CEA)	New Course	Elective engineering course that provides architecture students a rigorous and relevant curricular offering while enhancing the architecture course sequence. Students learn about various aspects of civil engineering and architecture while applying their knowledge of design and development of residential and commercial properties and structures.	No impact on overall staffing
Applied Technology	*PLTW* Engineering Design & Development (EDD)	New Course	Elective engineering course that provides upper class students who have completed Introduction to Engineering Design and one additional PLTW engineering course to experience this capstone research, project-based course.	No impact on overall staffing
Business	*Investment Strategies*	New Course	Elective course focusing on investing and financial planning strategies, helping students develop skills in the areas of wealth management, analysis and selection of investments, and setting investment goals to achieve financial growth and long-term financial security. In addition, students will increase career awareness and explore potential careers for finance majors, while working with industry professionals.	No Impact on overall staffing

In addition, Glenbrook South will add these courses that were previously approved and are available at Glenbrook North:

Department	Course Title	Rationale
Physical Education	*Weight Training and Conditioning II*	Many of our students desire to greatly improve their overall strength, conditioning, and athletic skills and abilities while gaining a deeper understanding of the anatomy and physiology of strength training.
Science	*Honors Physics*	This freshman class will allow some of our honors students to experience a similar course sequence as the honors students at Glenbrook North and allow for interdisciplinary work to exist between courses in PLTW and science as part of the STEM Learning Community.
Science	*Astronomy 171*	GBS currently offers Astronomy 161 but we will add Astronomy 171 as an option for students who elect to take this course for honors credit. As is done at GBN, this course will be offered in the same classroom but lab work, assessments, and projects will be differentiated for students taking this course for honors credit.
Social Studies	*AP US Government*	There is a considerable overlap between the content of the AP curriculum and the existing one semester Political Science course. Students in the past from the Political Science have succeeded on the AP test.

In addition, the following name changes for courses are also being proposed:

Department	Current Course Title	New Course Title	Rationale
Mathematics	*Advanced Algebra*	*Algebra 2*	The new name better aligns with the Common Core initiatives and also alleviates confusion among parents who misunderstand "advanced" as "honors." This will apply to all levels.
Music	*Electronic Music Studio*	*Music Production and Technology*	The term "Electronic" is a dated concept. The digital audio work in this class provides students the skills needed to develop projects into well-formed productions.

Business	*Computer Applications*	*Technology Essentials*	Name change to more accurately reflect this course offering's realignment as a business education technology survey course that provides opportunities for students to build relevant, current, and necessary skills.
Business	*Introduction to Business*	*Introduction to Business Strategies and Entrepreneurship*	Name change to more accurately reflect the focus and scope of this business education elective course and its focus on the aspects of business and entrepreneurship, given the realignment of curriculum and introduction of the Investment Strategies course.

Current Department Name	New Department Name Title	Rationale
Applied Technology, Business, and Family and Consumer Science	*Career and Technical Education*	Career and Technical Education is a more relevant and accurate description of the offerings in the department, and is a more appropriate fit to the department vision of educating and exposing students for greater career awareness and experiences.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook South/Glenbrook North **Department:** Applied Technology **Date:** 10/20/13

Name of proposed curricular change: PLTW Civil Engineering Architecture (honors level)

1. **Brief description of the curricular change:**

PLTW Civil Engineering Architecture Grade: 10, 11, 12th Length: Yearlong

Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. In addition, students use 3D design software to design and document solutions for major course projects. Students communicate and present solutions to their peers and members of a professional community of engineers and architects. This course will follow PLTW Introduction to Engineering Design for students interested in architecture.
NOTE: If approved this course will replace an upper level Architecture course as we revise that sequence.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. PLTW integrates national academic and technical standards and STEM principals while influencing and engaging both males and females to pursue careers in engineering with courses that are project-centered, problem-based and technology-integrated, preparing students to excel in high-tech fields.

2. **Curriculum Planning Committee Membership**

a) List the members of the committee.

Teachers: Michael Sinde, Dara Randerson, Steve Silca
Instructional Supervisors: Dawn Hall, Mary Kosirog

PLTW: Brenda Pacey, Sena Cooper
GBS Consulting Team: Jeff Rylander
Additional Teacher Consultants: Bill Christian, Ken Albert, Eric LeBlanc

b) Give the rationale for the membership of this committee.

Michael Sinde is an applied technology teacher proposing curricular change and was one of ten original pilot teachers in the State of Illinois to start PLTW. Dara Randerson is a PLTW master teacher, a former engineer, and current applied technology PLTW teacher at GBS.

Dawn Hall is the Instructional Supervisor of Applied Technology, Business Education & Family and Consumer Science department at Glenbrook South and Mary Kosirog is the Instructional Supervisor of the Career and Life Skills department at Glenbrook North.

Jeff Rylander is the Instructional Supervisor for the GBS Science Department.

b) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

The following individuals have been consulted but do not require compensation.

Brenda Pacey is the Illinois Project Lead the Way Affiliate Director.

Sena Cooper is the Project Lead the Way Director of School Engagement, Midwest Region.

Bill Christian is an Introduction to Engineering Design Master Teacher for the State of Illinois and teaches at Thornton Township High School.

Ken Albert is a Project Lead the Way Master Teacher and started PLTW at Niles North High School.

Eric LeBlanc is a Project Lead the Way Teacher and started PLTW in District 211.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

- 2013-14 inaugural PLTW enrollments of over 200 students demonstrates an extremely high demand for the PLTW course offerings.
- Need to create programs of study to better serve students. Maintain CAD sequence at regular level. Maintain pre-engineering PLTW sequences at honors level and eliminate the need to stack courses of different levels, which has been the practice.
- Females are underrepresented in our engineering courses.

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

PLTW is the largest non-profit provider of innovative and rigorous STEM education programs. More than 4,700 schools and 400,000 students in all 50 states and the District of Columbia are engaged in PLTW courses.

This growth is possible because PLTW programs are effective and engaging. From students in the classroom to parents and volunteers, school principals, and educators, PLTW has inspired thousands of people to take part in improving our schools and advancing their curricula.

Project Lead the Way (PLTW) has been nationally recognized as one of just four high-quality STEM programs that are immediately scalable on a national level. Of the four programs selected, PLTW is the only in-school STEM curricular program for elementary, middle, and high school students and the only program offering a comprehensive professional development model for teachers. *Press Release*: *October 3, 2013*

More than 10,500 teachers and 8,000 high school counselors have undergone advanced training with PLTW. Our network includes 500 Core Training Instructors who are among the best and brightest STEM educators in the country.

PLTW Gets Results

- PLTW is a "**model for 21st century career and technical education" –** Harvard Graduate School of Education
- According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that **students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors** than those who do not. http://www.mnceme.org/796/
- 92% of high school seniors who are taking PLTW courses intend to pursue a four-year degree or higher, 51% intend to pursue a graduate degree, and 70% intend to study engineering, technology, or computer science. By comparison, 67% of all beginning postsecondary students intended to pursue a bachelor's degree or higher as reported by the National Center for Education Statistics. (True Outcomes – 2009)
- About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they **had a clear and confident sense of the types of college majors and jobs they intended to pursue**. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)
- College students, who took PLTW courses in high school, **study engineering and technology at 5 to 10 times the rate of those students who did not take PLTW** courses in high school and also have higher retention rates in their fields of study.
- Retention in college engineering programs is extremely low at 50% on average, while PLTW students have much higher rates of retention. For example, PLTW students at the Milwaukee School of Engineering have 100% retention.

- The average freshman GPA total for Milwaukee School of Engineering in 2007 was 2.85; the average GPA for PLTW freshman students in 2007 was 3.03. (Milwaukee School of Engineering 2008 Report)

4. **Rationale for addressing the need through a curricular change:**
   a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

PLTW promotes critical thinking, creativity, innovation and real-world problem solving skills in students. This will provide a college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will:

- have an opportunity to earn college credit in PLTW certified schools
- meet and work with engineers from various industries in the area
- prepare to pursue a post-secondary education and careers in STEM-related fields

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

Alternative: Engineering by Design
Engineering by Design does not articulate with colleges and is not as nationally recognized.

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing Civil Engineering and Architecture and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning, in a project-based curriculum. The hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas.

5. **Description of proposed change:**

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

Glenbrook South:
Students who have expressed an interest in architecture or STEM-related careers, and the advantage of PLTW is it will allow these students who started as freshman to experience specialization courses as sophomores, juniors and seniors. Target Group will include our current introduction to engineering or principles of engineering students – over 200 students during the 2013-14 school year. In addition, PLTW should draw additional students on a pathway to a career in STEM-related fields by providing a rigorous curriculum.

The course assumes previous coursework in one or both of the PLTW foundation courses, and students should be concurrently enrolled in college preparatory mathematics and science.

Glenbrook North: Our target group will be students who have successfully completed Introduction to Engineering Design (IED), have an interest in architecture and be concurrently enrolled in college preparatory mathematics and science courses.

b) Provide a tentative outline of the proposed course or program.

Civil Engineering and Architecture is the study of the design and construction of residential and commercial building projects. The course includes an introduction to many of the varied factors involved in building and site design and construction including building components and systems, structural design, storm water management, site design, utilities and services, cost estimation, energy efficiency, and careers in the design and construction industry.

The major focus of the CEA course is to expose students to the design and construction practices of residential and commercial building projects, design teams and teamwork, communication methods, building

codes and ordinances, engineering design calculations, and technical documentation. Problem solving skills and design experience are gained through an activity-project-problem-based (APPB) teaching and learning pedagogy. Used in combination with a teaming approach, APPB-learning challenges students to continually hone their interpersonal skills and creative abilities while applying math, science, and technology knowledge learned in other courses to solve design problems and communicate their solutions.

Students will use industry standard 3D architectural modeling software to facilitate site and building design and technical documentation. As the course progresses and the complexity of the design problems increase, students will learn more advanced computer modeling skills as they become more independent in their learning, more professional in their collaboration and communication, and more experienced in problem solving and design.

Civil Engineering and Architecture is a high school level course that is appropriate for 10th, 11th, 12th grade students interested in careers related to civil engineering and architecture. No previous knowledge is assumed, but students should be concurrently enrolled in college preparatory mathematics and science courses in order to facilitate the use and understanding of appropriate math and science concepts necessary for the successful completion of CEA coursework.

The course of study includes:

- Overview of Civil Engineering and Architecture
    - History of Civil Engineering and Architecture
    - Careers in Civil Engineering and Architecture
- Residential Design
    - Building Design and Construction practices
    - Cost estimates
    - Energy efficiency
    - Storm water analysis
    - Water supply
    - Plumbing
    - Electrical systems
    - Wastewater management
- Commercial Applications
    - Commercial Buildings
    - Structural Design
    - Services and Utilities
    - Site Considerations
- Commercial Building Design
    - Commercial Building Design Project
    - Commercial Building Design Presentation

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

Glenbrook South:
Staffing is not anticipated to change for the 2014-15 school year. Facilities we will utilize will include the fabrication lab and existing equipment, which will reduce implementation costs. We also anticipate a savings on AutoDesk software thru PLTW.

Equipment and supplies will be purchased based on student enrollment and the CEA purchase manual guidelines.

Marketing and promotion for introduction of Civil Engineering and Architecture to students, parents and community members.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the district.

Glenbrook North:
Depending on the PLTW enrollment in the 2014-2015 school year this course may be offered in the 2015-2016 school year. We do not anticipate a change in staffing or significant implications for other departments other than enhancements to student understandings of math and science concepts through application.

Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due to a yearly participation fee of $3,000. With this fee, the school receives unlimited software licenses and support for our teachers and students.

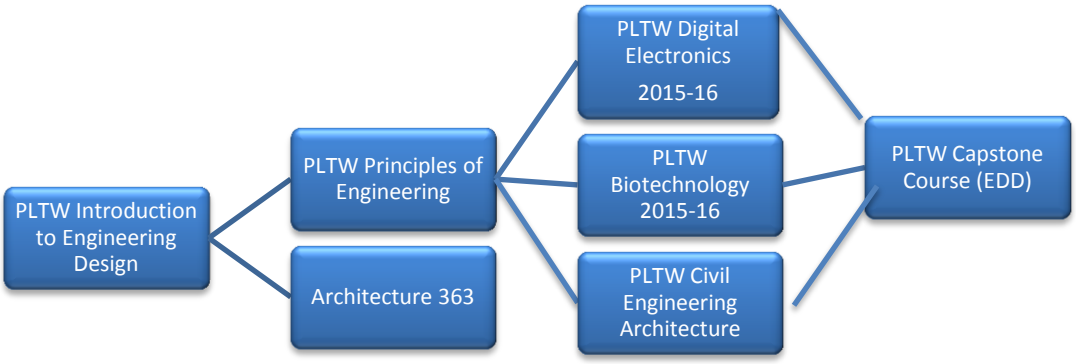
Equipment and supplies will be purchased based on student enrollment and the Civil Engineering and Architecture purchase manual guidelines.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the department. In addition, GBN applied for a PLTW startup grant to assist in implementation costs.

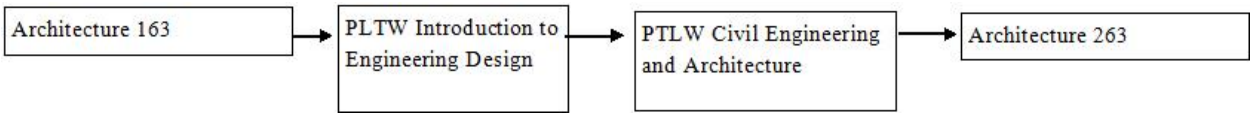
b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

Glenbrook South:
The proposed change is part of the overall vision of the applied technology department to implement an entire STEM program of study by substituting PLTW courses and revised upper level architecture courses for the previous engineering and architecture course sequences. In subsequent years, the applied technology

department would like to implement PLTW specialization courses based on enrollment and student interest.



Glenbrook North:
Since we are a year behind Glenbrook South in the implementation of PLTW, we need to analyze student interest to determine the sequence of additional PLTW courses. Below is a proposed course sequence in the architecture career pathway.



c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Glenbrook South:
Equipment and supplies will be purchased in preparation based on student enrollment and the Civil Engineering & Architecture purchase manual guidelines.

Marketing and promotion for PLTW Civil Engineering & Architecture to students, parents and community members.

Summer curriculum proposal to review and align our current Architecture 363 course with Introduction to Engineering Design, and Civil Engineering Architecture.

Glenbrook North may have to train a teacher at the cost of $2,500 per course plus room and board in Champaign or Chicago (U of I campuses).

7. **Method of evaluating the success of the proposal after it is implemented:**

a) If the proposal is approved and implemented, how shall it be evaluated?

Glenbrook South:
Evaluations will include student surveys, enrollment data including females, PLTW student test scores on PSAE, and number of students declaring engineering majors. Students participating in PLTW courses take several exams, and student scores will be evaluated. At the conclusion of the 2014-15 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors, and student PSAE scores overall and in science and math. Based on these evaluation measures, course team will make recommendations for curricular changes.

Glenbrook North:
At the conclusion of the 2015-16 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring architecture and engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

b) What specific outcomes shall indicate success of the implemented proposal?

Superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in enrollment including increase in enrollment of females in engineering course.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook South and Glenbrook North **Department:** Applied Technology **Date:** 10/20/13

Name of proposed curricular change: PLTW Engineering Design and Development (honors level)

1. **Brief description of the curricular change:**

PLTW Engineering Design & Development Grade: 11, 12th Length: Yearlong

In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present and defend their original solution to an outside panel. This course is appropriate for 11th and 12th grade students.
NOTE: If approved, this course will replace Engineering Design & Fabrication 463.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. PLTW integrates national academic and technical standards and STEM principals while influencing and engaging both males and females to pursue careers in engineering with courses that are project-centered, problem-based and technology-integrated, preparing students to excel in high-tech fields.

2. **Curriculum Planning Committee Membership**

c) List the members of the committee.

GBS Teachers: Michael Sinde, Dara Randerson
Instructional Supervisors: Dawn Hall, Mary Kosirog
PLTW: Brenda Pacey, Sena Cooper
GBS Consulting Team: Jeff Rylander, Neil Schmidgall, and Mike Stancik
Additional Teacher Consultants: Bill Christian, Ken Albert, Eric LeBlanc

b) Give the rationale for the membership of this committee.

Michael Sinde is an applied technology teacher proposing curricular change and was 1 of 10 original pilot teachers in the State of Illinois to start PLTW. Dara Randerson is a PLTW master teacher, a former engineer, and current PLTW teacher at GBS.

Dawn Hall is the Instructional Supervisor of Applied Technology, Business Education & Family and Consumer Science department at Glenbrook South. Mary Kosirog is the Instructional Supervisor for Career and Life Skills at Glenbrook North.

Jeff Rylander is the Instructional Supervisor for Science Department.

Neil Schmidgall is co-sponsor of the Engineering Club and teaches engineering physics. Mr. Schmidgall is also a former mechanical engineer.

Mike Stancik is co-sponsor of the Engineering Club and teaches engineering physics. Mr. Stancik is also a former electrical engineer.

c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

The following individuals have been consulted but do not require compensation.

Brenda Pacey is the Illinois Project Lead the Way Affiliate Director.

Sena Cooper is the Project Lead the Way Director of School Engagement, Midwest Region.

Bill Christian is an Introduction to Engineering Design Master Teacher for the State of Illinois and teaches at Thornton Township High School.

Ken Albert is a Project Lead the Way Master Teacher and started PLTW at Niles North High School.

Eric LeBlanc is a Project Lead the Way Teacher and started PLTW in District 211.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

<u>Glenbrook South:</u>

- 2013-14 inaugural PLTW enrollments of over 200 students demonstrates an extremely high demand for the PLTW course offerings.
- Need to create programs of study to better serve students. Maintain CAD sequence at regular level. Maintain pre-engineering PLTW sequences at honors level and eliminate the need to stack courses of different levels, which has been the practice.
- Females are underrepresented in our engineering courses.

Glenbrook North:

- According to the senior exit survey from the class of 2013, there were 41 students who were majoring in some area of engineering.
- Need to create programs of study to better serve students. Applied Technology offers one engineering course (Principles of Science & Technology), but not a sequence of courses like PLTW.
- Females are underrepresented in our engineering class.

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

PLTW Impact

PLTW is the largest non-profit provider of innovative and rigorous STEM education programs. More than 4,700 schools and 400,000 students in all 50 states and the District of Columbia are engaged in PLTW courses.

This growth is possible because PLTW programs are effective and engaging. From students in the classroom to parents and volunteers, school principals, and educators, PLTW has inspired thousands of people to take part in improving our schools and advancing their curricula.

Project Lead The Way (PLTW) has been nationally recognized as one of just four high-quality STEM programs that are immediately scalable on a national level. Of the four programs selected, PLTW is the only in-school STEM curricular program for elementary, middle, and high school students and the only program offering a comprehensive professional development model for teachers. *Press Release*: *October 3, 2013*

More than 10,500 teachers and 8,000 high school counselors have undergone advanced training with PLTW. Our network includes 500 Core Training Instructors who are among the best and brightest STEM educators in the country.

PLTW Gets Results

- According to an evaluation by High Schools That Work, PLTW students scored significantly higher in both mathematics and science high school assessments. The National Center for Education Statistics 2006-07 True Outcomes report explains that **students who participate in PLTW are five times more likely to graduate college as science, technology, engineering and mathematics (STEM) majors** than those who do not. http://www.mnceme.org/796/
- 92% of high school seniors who are taking PLTW courses intend to pursue a four-year degree or higher, 51% intend to pursue a graduate degree, and 70% intend to study engineering, technology, or computer science. By comparison, 67% of all beginning postsecondary students intended to pursue a bachelor's degree or higher as reported by the National Center for Education Statistics. (True Outcomes – 2009)
- About 90% of students who take PLTW courses and were surveyed at the end of their senior year said they **had a clear and confident sense of the types of college majors and jobs they intended to pursue**. Those students also said that their PLTW experiences were very significant in developing this self-knowledge and their PLTW experiences significantly increased their ability to succeed in postsecondary education. (True Outcomes – 2009)

- College students, who took PLTW courses in high school, **study engineering and technology at 5 to 10 times the rate of those students who did not take PLTW** courses in high school and also have higher retention rates in their fields of study.
- Retention in college engineering programs is extremely low at 50% on average, while PLTW students have much higher rates of retention. For example, **PLTW students at the Milwaukee School of Engineering have 100% retention**.
- The average freshman GPA total for Milwaukee School of Engineering in 2007 was 2.85; the average GPA for PLTW freshman students in 2007 was 3.03. (Milwaukee School of Engineering 2008 Report)

4. **Rationale for addressing the need through a curricular change:**

b) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

PLTW promotes critical thinking, creativity, innovation and real-world problem solving skills in students. This will provide a college-articulated curriculum and additional course opportunities for students to develop or pursue their interest in engineering.

Students will:
- have an opportunity to earn college credit in PLTW certified schools
- meet and work with engineers from various industries in the area
- prepare to pursue a post-secondary education and careers in STEM-related fields

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

Alternative: Engineering by Design
Engineering by Design does not articulate with colleges and is not as nationally recognized.

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

By introducing Engineering Design and Development and additional Project Lead the Way courses, we will complement the science and math curricular efforts by providing additional opportunities for students to apply what they are learning, in a project-based curriculum. The hands-on approach to engineering also highlights the need and use of math and science, often generating increased interest in these areas. As a capstone course, EDD will also provide an opportunity for students to apply the skills they've acquired in their PLTW courses.

5. **Description of proposed change:**

b) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

<u>Glenbrook South:</u>
The change has been designed for students who have expressed an interest in architecture or STEM-related careers. The advantage of PLTW is it will allow these students who started as freshman to experience specialization courses as sophomores, juniors and seniors. Target Group will include our current Introduction

to Engineering Design or Principles of Engineering students – over 200 students during the 2013-14 school year. In addition, PLTW should draw additional students on a pathway to a career in STEM-related fields by providing a rigorous curriculum.

The course assumes previous completion of at a minimum the two PLTW foundation courses, and students should be concurrently enrolled in college preparatory mathematics and science.

Glenbrook North:
Our target group will be students who have successfully completed Introduction to Engineering Design (IED), one other PLTW course and be concurrently enrolled in college preparatory mathematics and science courses.

b) Provide a tentative outline of the proposed course or program.

Engineering Design and Development (EDD) is the capstone course in the PLTW high school engineering program. It is an engineering research course in which students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

Students will perform research to choose, validate, and justify a technical problem, and eliminate one of the "Don't you hate it when...?" statements of the world. After carefully defining the problem, teams of students will design, build, and test their solution. The use of 3D design software and printers allows students to create prototypes and work through the revision process. Finally, student teams will present and defend their original solution to a panel of outside reviewers. While progressing through the engineering design process, students will work closely with experts and will continually hone their organizational, communication and interpersonal skills, their creative and problem solving abilities, and their understanding of the design process and product life cycle. Finally, skills in time management and collaboration as part of a team are developed, culminating in a valuable skill set for the future.

Engineering Design and Development is a high school level course that is appropriate for 11th and 12th grade students. Since the projects on which students work can vary with student interest and the curriculum focuses on problem solving, EDD is appropriate for students who are interested in any technical career path. EDD should be taken as the final capstone PLTW course since it requires application of the knowledge and skills from the PLTW foundation courses.

The course of study includes:

- Design Process
- Intellectual Property
- Research
- Problem Identification, Validation, and Justification
- Teamwork
- Project Management
- Design Specifications
- Concept Sketching
- Design Proposal
- Virtual Solutions
- Building a Prototype

- Testing a Prototype
- Test Evaluation and Refinement
- Documentation
- Presenting the Process and Results

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

Glenbrook South:
Staffing is not anticipated to change for the 2014-15 school year. Facilities we will utilize will include the fabrication lab and existing equipment, which will reduce implementation costs. We also anticipate a savings of software costs due to a yearly participation fee of $3,000 that covers all software licenses and support for an unlimited number of students/seats.

Counselor and Administrator Training Seminar is required yearly and hosted by University of Illinois, at a cost of $100 per person registration fee. In addition, travel expenses will be incurred.

No additional resources in personnel. Current teacher's attend curriculum update training at a cost of $100 for registration.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the district.

Glenbrook North:
Staffing is not anticipated to change for the 2016-17 school year, however may change given growth in the program. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.

Facilities we will utilize include the architecture lab, an existing computer lab (available due to 1:1 initiative) and existing equipment, which will reduce implementation costs. We anticipate a savings of software costs to the district due to a yearly participation fee of $3,000. With this fee, the school receives unlimited software licenses and support for our teachers and students.

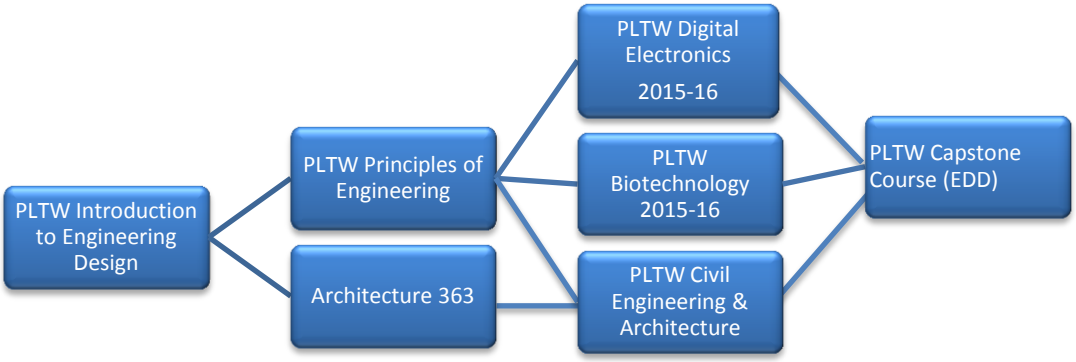
Equipment and supplies will be purchased based on student enrollment and the Engineering Design and Development (EDD) purchase manual.

NOTE: For all expenses, Perkins and CTEI grant funds will be used to help offset costs incurred by the department. In addition, GBN applied for a PLTW startup grant to offset implementation costs.

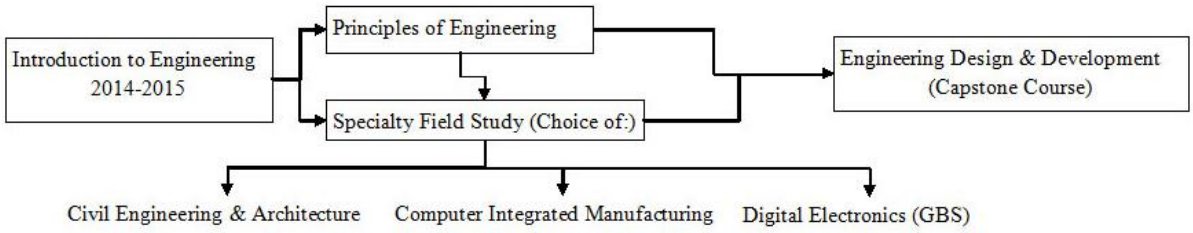
b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

Glenbrook South:
Engineering Design and Development (EDD) will replace Engineering Design and Fabrication 363 and 463, and will not add to the number of course offerings. The proposed change is part of the overall vision of the applied technology department to implement an entire STEM program of study by substituting PLTW courses and revised upper level architecture courses for the previous engineering and architecture course

sequences. In subsequent years, the Applied Technology department would like to implement PLTW specialization courses based on enrollment and student interest. We do not anticipate significant implications for other departments, other than enhancements to student understanding of math and science concepts through application.



Glenbrook North:
Since we are a year behind Glenbrook South in the implementation of PLTW, we need to analyze student interest to determine the order of additional PLTW courses. Below is a proposed Project Lead the Way course sequence.



d) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Glenbrook South:
Equipment and supplies will be purchased in preparation based on student enrollment and the Engineering Design and Development purchase manual guidelines.

Marketing materials and promotion for PLTW Engineering Design and Development to students, parents and community members.

Glenbrook North may have to train a teacher at the cost of $2,500 per course plus room and board in Champaign or Chicago (U of I campuses).

7. **Method of evaluating the success of the proposal after it is implemented:**

c) If the proposal is approved and implemented, how shall it be evaluated?

Glenbrook South:
Evaluations will include student surveys, enrollment data including females, PLTW student test scores on PSAE, and number of students declaring engineering majors. Students participating in PLTW courses take a national standardized exam, and student scores will be evaluated. At the conclusion of the 2014-15 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors, and student PSAE scores overall and in science and math. Based on these evaluation measures, course team will make recommendations for curricular changes.

Glenbrook North:
At the conclusion of the 2016-17 school year, students will complete a survey that solicits their feedback regarding the course. Data will be collected and evaluated on enrollment, number of students declaring engineering majors and pass rate on the national PLTW exam. Based on these evaluation measures the course team will make recommendations for curricular changes and the additional PLTW courses we will offer.

d) What specific outcomes shall indicate success of the implemented proposal?

Success of the implementation will be based upon superior pass rates on PLTW national exams, positive student surveys, increased number of students majoring in engineering, increase in overall enrollment (including increase in enrollment of females) in engineering course. In addition, a unique outcome for this capstone course will be successful industry partnerships and completed projects to valid open-ended technical problems by applying the engineering design process.

APPLICATION FOR CURRICULAR CHANGE

School: Glenbrook South **Department:** Business Education **Date:** 10/11/13

Name of proposed curricular change: Investment Strategies

1. Brief description of the curricular change:

Investing and Wealth Grade: 10, 11, 12th Length: Semester

This course focuses on investing and financial planning strategies, helping students develop skills in the areas of wealth management, analysis and selection of investments, and setting investment goals to achieve financial growth and long-term financial security. Course topics are taught with an emphasis on sound, fundamental analysis; long-term thinking, and appropriate risk-management. In addition, students will experience career awareness and exploration of the potential careers for finance majors. Students will work with industry professionals through Junior Achievement and business community partnerships. This class is ideal for any student who wants to learn about investment planning and the stock market or who wishes to pursue a career in business or finance. Course will fulfill the applied art graduation credit.

NOTE: This course will replace the current Introduction to Business Entrepreneurship 162 semester course.

2. **Curriculum Planning Committee Membership**

a) List the members of the committee.

Teacher: Brian Whalen
Instructional Supervisor: Dawn Hall

b) Give the rationale for the membership of this committee.

Brian Whalen is a business education teacher of 8 years and is proposing the curricular change, with the goal of expanding student exploration of Investing and Wealth Management.

Dawn Hall is the Instructional Supervisor of Applied Technology, Business Education & Family and Consumer Science department.

c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

No external consultants requested.

3. **Need for the curricular change:**

a) Present and analyze data on student learning that point to a need for change.

or

b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

- Recent economic uncertainty and instability has caused a great deal of stress on individuals and families who are uninformed on best practices for financial security.
- Business-related fields continue to be the **top major choice for Glenbrook South graduates, with 38% of seniors who declared a major choosing business** (Oracle survey, May 2013).
- Offering quality courses to prepare students for similar classes in college is a hallmark of great secondary schools, and **finance is a major that can lead to a place in 7 of the top 10 business careers** (*Best Business Jobs 2013,* U.S. News and World Report).
- Informal surveys of Glenbrook South students currently enrolled in Business Education courses found a strong desire to pursue a course that focuses on investing.
- Students enrolled in Introduction to Business continually rate their experience with the Stock Market Game as the highlight of the course.
- Current course offerings (Introduction to Business and Consumer Education) are limited in their ability to provide a rich and expanded student learning experience in finance education.
- Students have started a Finance Club in order expand on their exploration of the topics covered in Introduction to Business and Consumer Education.
- Area schools currently offering similar courses include Niles (District 219) and New Trier (District 203)

or

c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

- According to the Bureau of Labor Statistics, expected job growth in financial-related careers, including Financial Analyst and Securities Salespeople, is around 19% from 2010-2020.
- Numerous industry organizations including the Securities Industry and Financial Markets Association (SIFMA) Foundation and Junior Achievement promote financial literacy by providing free curricular resources for students in the areas of investing and finance.
- Communication with parents reinforces our efforts to promote financial literacy and independence and help students develop sound financial habits.
- A recent financial capacity survey, released by the **U.S. Treasury Department and the Financial Industry Regulatory Authority Investor Foundation, revealed a " . . . troubling picture of the current state of financial capability in the U.S. adult population."** The survey found that many Americans are failing to meet existing financial demands, engage in little or no planning for future events and potential emergencies, have modest knowledge of their current financial portfolio, and do not have an acceptable understanding of the financial decision-making process. (*Perspectives*, American Association of State Colleges and Universities, 2010).

4. **Rationale for addressing the need through a curricular change:**

a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

The Investing and Wealth Management course will promote problem-solving and critical thinking skills as students increase their understanding of financial markets, investing strategies, and work toward financial independence.

Students enrolled in the Investing and Wealth Management Course will have the opportunity to develop and improve on one of the most important career and life skills, addressing the need for financial literacy in an increasingly complex financial landscape for consumers and businesses.

b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

The committee reviewed possible addendums to current course offerings, but due to the extent of the content, it was the opinion of the committee that a new course proposal should be brought forth.

c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

The Investing and Wealth Management course will support other Business Education courses by providing students with the opportunity to explore the content further, as well as fulfilling the department goal of increased career awareness and exposure.

The project-based and hands-on approach reinforces the need and use of math as students apply what they have learned to real-life, personal experiences.

5. **Description of proposed change:**

a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

This course is designed for students in grades 10 through 12 who have an interest in continuing their understanding of investing and the financial markets. While there is no prerequisite, our target group would include students who are interested in or planning to pursue business careers, and have taken previous business education courses.

b) Provide a tentative outline of the proposed course or program.

The proposal is a one-semester course that is a challenge-based learning environment where the teacher would act as a facilitator throughout majority of the coursework. Students will develop and master problem-solving and literacy skills and be immersed in a hands-on, applied learning environment

Tentative course outline would include(but not limited to):

- Establishing financial goals to promote financial literacy and security
- Economic concepts
- Investments
- Securities exchanges
- Analysis and use of financial statements
- Investment analysis and portfolio management
- Students will create and manage a digital investment portfolio in an online Stock Market simulation involving the selection, buying and selling of securities
- Students will take a field trip to the Chicago Board Options Exchange and Chicago Mercantile Exchange to learn about the options and commodities market.
- Guest speakers, including stockbrokers, analyst, fund managers and traders will enhance the learning experience for students.

6. **Implications of the proposed change:**

a) What are the implications of this proposed change for staffing, facilities, and budget?

The addition of an Investing and Wealth Management course will create no additional staffing needs for the 2014-2015 school year. Any classroom resources will be purchased through the department budget or grant funds. Because students will be in a 1:1 environment, there is no need for lab space.

b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

We do not anticipate significant implications for other departments, with enrollment expected to come from the previous entrepreneurship class. A positive implication is reinforcement and enhancement to student understanding of math concepts through application.

For students who have been introduced to investing in previous business classes, this course will allow them to advance and deepen their understanding, including more sophisticated concepts and strategies.

c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

Brian Whalen will request a summer curriculum project to create the course curriculum, including meeting teachers from Niles and New Trier to research curriculum that is currently in place. It would also be the goal to align our curriculum to meet any district and building initiatives.

7. **Method of evaluating the success of the proposal after it is implemented:**

a) If the proposal is approved and implemented, how shall it be evaluated?

Data will be collected and evaluated on enrollment for the course and the number of students declaring business majors.

Evaluations will include student surveys and instructor feedback.

An analysis of the course's impact on student preparedness in additional business courses through teacher feedback.

b) What specific outcomes shall indicate success of the implemented proposal?

- Increased enrollment not only in this course, but other business education courses.
- Growth in students' business soft and technical skills from beginning to the end of the semester.
- Increased student awareness and interest in possible business careers based on their experience.
- Increased connections and interactions with business and industry professionals to increase student's career awareness.

PROCEDURES FOR IMPLEMENTING BOARD POLICY: **CURRICULUM PLANNING STRATEGY** **7010**

Section A - Introduction

These procedures, outlined below, are intended to facilitate the systematic processing of curriculum development proposals for making modifications in the instructional program of District #225. The curriculum shall be defined to consist of all courses of study offered by the district.

Modifying the curriculum shall be defined as:

1. Adding or deleting a course, an entire sequence of courses, or a program.

2. Significantly changing the goals of an existing course or program.

Decisions concerning the administrative operation of the curriculum shall not be subject to the curriculum planning strategy. Decisions concerning such items as the following shall be made by the appropriate administrative staff:

1) assignment of the instructional staff,

2) development of the master class schedule,

3) assignment of students to classes,

4) recommendations concerning instructional materials, subject to the provisions of Policy 7180: Instructional Materials,

5) changes in course or program titles,

6) utilization of facilities,

7) classroom methodology or individual teaching strategies,

8) use of new instructional technologies.

.

Section B - Procedures

1. Each instructional supervisor, in conjunction with the associate principal for instruction and the department staff, shall conduct an annual evaluation of approximately twenty percent (20%) of the department's courses and programs. It is the expectation that all courses within a department will be reviewed at least once during the five-year cycle. The courses and programs to be reviewed will be determined through a collaborative process involving the associate principals for instruction and instructional supervisors at both schools. This review will be used as a base for the Instructional Supervisor Curriculum Report.

2. The impetus for curriculum change may be such factors as, but not limited to, the following: a demonstrated need for learning outcomes not met by current curriculum; data on student learning; demographic data on students; professional expert advice from educational consultants or representatives of higher education; the conclusions of educational research. Upon seeing a curricular need, staff members, students, parents, and members of the community may submit ideas for curriculum changes to the instructional supervisor of the appropriate department. Principals also shall inform parents and members of the community about curricular issues and shall invite representatives to join curriculum planning committees when appropriate. Experts and consultants may be engaged to provide input to the process when deemed appropriately by the respective principals.

3. Upon receiving a suggested change in curriculum, the instructional supervisor may convene an ad hoc departmental curriculum planning committee to address the need for the curricular change. This curriculum planning committee, after studying the perceived need, may write a curriculum proposal. If the proposed change affects more than one department, the principal may convene an ad hoc interdisciplinary committee to address the perceived need.

4. The proposal of the departmental committee must include the need, the rationale, a description, and the implications of the curricular change, as well as a method of evaluating the success of the implemented proposal (Appendix B).

5. All proposals recommended by the departmental or interdisciplinary committees shall be reviewed by the building's instructional supervisors and principal. Accepted proposals shall be acted on successively by the principal, superintendent, and the Board.

   The decision or recommendation of each of the above-listed individuals or groups shall be communicated in writing to the committee submitting the proposal. A timeline for the strategy is contained in Appendix A of these Procedures.

6. No proposal shall be implemented unless approved by the principal, the superintendent, and the Board. The instructional supervisors shall serve in an advisory function.

7. Each year proposals shall be submitted to the Board for approval as indicated in the timeline in Appendix A of these Procedures. Under extraordinary circumstances, the superintendent may authorize the submission of a proposal to the curriculum planning process or to the Board at any time during the year.

8. One year after the implementation of a curriculum change, the instructional supervisor and the designated administrator shall evaluate each proposal approved by the Board in order to determine whether the proposal was successful in meeting its goals and fulfilling the educational needs. A report of this evaluation, together with a recommendation as to the continuance or modification of the implemented change, shall be shared with the appropriate committee that had proposed the curriculum change and shall be submitted to the superintendent and the Board no later than the end of the third semester that the course is offered.

APPENDIX A

CURRICULUM PLANNING STRATEGY ANNUAL TIMELINE *

Deadline	Activity
March 15 to August	Collaboration between instructional supervisors and principal or associate principal for instruction at both schools to review department curriculum in light of data on student learning and to consider curricular changes.
August to October	Instructional supervisors set up committees for suggested curricular changes. Committees meet, plan, elicit input from various constituencies, and write proposal applications.
By November 1	Curriculum planning committees submit applications for curriculum changes to the instructional supervisors.
By November 15	Instructional supervisors review proposals and submit recommendations to the principals.
By December 1	Principals accept or reject proposals and, if accepted, send them to the superintendent including any resource implications.
Prior to Winter Break	Superintendent accepts or rejects proposals and gives rationale for actions.
By February 1	Superintendent informs the Board of Education and submits accepted proposals for Board action.
By March 1	Instructional supervisors submit proposals for summer curriculum work to develop course outlines and instructional resources.

By March 15	Superintendent either approves the proposal for summer project and designates funding for summer curriculum project or rejects the proposal. Instructional Supervisor Curriculum Reports are due to the superintendent. These reports are based on curriculum review conducted or modifications made during the past year and identified curriculum directions for the ensuing year(s). The reports should also include an evaluation and recommendation for any course that has completed the third semester of implementation.

Note: Under extraordinary circumstances, the superintendent may authorize the submission of a proposal to the Board at any time during the year.

*** This timeline will be coordinated with but not limited by the district budget timeline process.**

APPENDIX B

APPLICATION FOR CURRICULAR CHANGE

School: Department: Date:

Name of proposed curricular change:

1. **Brief description** of the curricular change

2. **Curriculum Planning Committee Membership**

   a) List the members of the committee.

   b) Give the rationale for the membership of this committee.

   c) If outside experts or consultants are requested, give rationale for their inclusion, proposed revisions, and the curriculum vitae and fees.

3. **Need** for the curricular change:

   a) Present and analyze data on student learning that point to a need for change.

   or

   b) Present other data (demographic, anecdotal, research, and others) that point to a need for change.

   or

   c) Summarize opinions of experts (researchers, higher educational professionals, business people, parents, community members) who speak to a need for change.

4. **Rationale** for addressing the need through a curricular change:

   a) State the purpose of the change, indicating specifically how this curriculum change shall improve student learning by meeting the needs described in #3 above.

   b) If the committee considered other approaches to meeting the needs described above, describe those alternatives and indicate why each alternative was rejected.

   c) Delineate the ways in which this curriculum proposal, if implemented, shall complement other courses in the department and the school.

APPENDIX B (Continued)

APPLICATION FOR CURRICULAR CHANGE

5. **Description** of proposed change:

   a) Describe the students for which this curriculum change has been designed and the approximate size of the target group.

   b) Provide a tentative outline of the proposed course or program.

6. **Implications** of the proposed change:

   a) What are the implications of this proposed change for staffing, facilities, and budget?

   b) What are the implications of this proposed change for other courses in the department and for other departments in the school?

   c) What additional resources in personnel and money shall be required before this change is implemented? Shall summer curriculum work be required?

7. **Method of evaluating** the success of the proposal after it is implemented:

   a) If the proposal is approved and implemented, how shall it be evaluated?

   b) What specific outcomes shall indicate success of the implemented proposal?

Adopted: November 21, 1977
Revised: October 9, 1995
Revised: November 27, 2000
Revised: August 11, 2003