
Exploring the Allocation of Resources for Competency-Based Youth Education in the United States

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Abstract

Education in the United States, specifically higher education institutions, concentrate their efforts on preparing students for standardized exams and on gaining entrance into prestigious colleges and universities, while the workplace concentrates their efforts on the prestige of the institution that the students attended rather than whether or not the graduates possess the right skills. Together, higher education institutions and the workplace resemble a pivot away from Competency-Based Education (CBE), posing the the question of, “How much money (in United States Dollars, or USD) of its available federal resources has the United States allocated towards Competency-Based Education, and what effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes?” Archival literature was used to answer the research question. Furthermore, a combination of qualitative and quantitative methods was adopted to answer the two respective parts of the research question. Results found that the United States government allocates \$720.9 billion on education. However, there is insufficient research conducted and therefore a lack of evidence to quantify the amount of money that the United States government allocates towards Competency-Based Education. It is postulated that the lack of research is attributed to the fact that the United States Office of Education recognized Competency-Based Education in the early 1970s. There is a need for transparency regarding the budget of the United States Department of Education on Competency-Based Education to determine whether or not the United States government is properly allocating its resources.

Categories: Youth, United States, Education

Keywords: Competency, Resources, Culture Grade

Background Research

Involving youth into a skilled workforce is supposed to be the main purpose of education. However, education and school reforms focus too much on getting students to pass certain tests or getting entrance into prominent colleges and universities (Brand, 2007-2008).

There are two major terms of education: Education for Development and Education in Development. Education for Development considers the role of education as an investment for economic development and productivity. On the other hand, Education in Development focuses on the relationship between education and development more precisely. According to this school of thought, education can socioeconomically and culturally change society (Sung-Sang Yoo, 2019). To be productive in the economy, youth must gain a certain Competency-Based Education for their future careers. Many graduates face difficulties with skills and knowledge in their work careers. Youth are expected to reform society and to change the world using their knowledge, attitudes, and behaviors. Competency-Based Education is well-known across the world today. The United States Department of Education and different levels of policy organizations of the United States support Competency-Based Education (Lynn Curry, 2017), but there is insufficient research on how to properly allocate the resources of the United States government on Competency-Based Education. The Federal Resources for Educational Excellence (FREE) program was offered by the United States Department of Education in 1997 to provide a way to gain digital teaching and learning resources. In the 2017-2018 school year, there are 137,432 institutions in the United States including elementary and secondary (middle and high schools) schools, combined schools, and post-secondary (colleges and universities) institutions (Bouchrika, 2020). Defining the feasible educational institutions that utilize Competency-Based Education, this paper would describe how to properly allocate the available resources of the United States government on Competency-Based Education.

Operational Definitions

What is Competency-Based Education? Competency-Based Education (CBE) has multidimensional aspects. Therefore, it does not have any universally shared definition (Gervais, 2016). CBE connects theoretical perspectives to practice, and so the learning outcomes of students are given priority in CBE. Riesman (1979) describes CBE as “a form of education that derives curriculum from an analysis of a prospective or actual role in modern society and that attempts to certify student progress on the basis of demonstrated performance in some or all aspects of that role. Theoretically, such demonstrations of competence are independent of time served in formal education settings.” (Gervais, 2016).

Who is the Youth? According to the United Nations, youth are people between the ages of fifteen and twenty-four. This definition was made during preparations for the International Youth Year (1985) and endorsed by the General Assembly. All United Nations statistics on youth are based on this definition, as illustrated by the annual yearbooks of statistics published by the United Nations system on demography, education, employment and health (Youth, 2020).

Career and Technical Education Programs. Career and Technical Education Programs (CTE) are the alternative programs that provide a hands-on learning experience and ease students' transition into the workforce.

Literature Review

Competency-Based Education (CBE), also known as Outcome Based Approaches, dates back outside of education to the Late Middle Ages in craft guilds, apprenticeship training programs, technical training programs, and licensure programs. During the Middle Ages, medieval societies were organized into social hierarchies under the feudal system. Contingent on the feudal system was the division of labor among the social classes. These medieval societies were ruled under monarchs, or kings and queens, who were the absolute owners of the land in their respective kingdoms. While the kings were the absolute owners of the land in their respective kingdoms, they entrusted the lords (nobles) with their land by gifting their land to the lords. The lords would then provide knights (vassals) with their designated portion of the king's land, fiefs, in exchange for the provision of military service of the king's land to protect it from invasion from the other nearby medieval kingdoms. At the bottom of the feudal system, the peasants (serfs) were delegated to work the land by growing crops in exchange for the provision of physical and legal protection by the knights.

The townspeople of the medieval kingdoms were free since they did not belong to the feudal system. Instead, they engaged in craft guilds, apprenticeship training programs, technical training programs, and licensure programs. However, these craft guilds and training programs were regulated to limit the number of townspeople that could enter specialized crafts. Although there was a revitalized need for specialized craftsmen due to the feudal system conditional on growing international trade, the number of specialized craftsmen that were enabled to enter a craft was exclusionary (See Appendix A for more information on the feudal system). Ultimately, Competency-Based Education in craft guilds, apprenticeship training programs, technical training programs, and licensure programs “[identified] established standards for competence and performance ... for specific jobs and roles” (Nodine, 2016).

In the late nineteenth century, several centuries after the development of craft guilds, apprenticeship training programs, technical training programs, and licensure programs, Competency-Based Education expanded across the Atlantic Ocean to the United States in the form of legislation. President Abraham Lincoln signed the Morrill Land-Acts of 1862, formally known as “An Act Donating Public Lands to the several States and Territories which may provide Colleges for the Benefit of Agriculture and the Mechanic Arts,” that granted each of the then 34 states (Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, and Wisconsin) the ability to sell up to 30,000 acres of their land to the federal government to establish higher-education institutions, specifically land-grant colleges. The First Industrial Revolution in the United States from the late eighteenth century to the mid nineteenth century followed in the footsteps of Great Britain by urbanizing itself. Furthermore, the transformation of the American communities entailed agricultural inventions, notably the Norfolk four-course crop

rotation system, seed drill, threshing machine, selective breeding, cotton gin, reaping machine, and the steel plow. Consequently, the land-grant colleges trained the local, rural communities on the proper usage, including the operation and management, of the new farm machinery for agricultural production through kinesthetic learning in which the students demonstrated that they were able to both operate and manage the farm machinery. In the Second Industrial Revolution, Frederick Taylor, crowned the Father of Scientific Management, published a book titled “The Principles of Scientific Management” where he proposed that if the management of a business decomposed every step of the extensive manufacturing process, simplifying the jobs of its workers into specialized, repetitive tasks, then worker productivity would increase. Conversely to craft guilds and training programs in the Late Middle Ages, Competency-Based Education in the United States evolved into being democratized.

Until Benjamin Bloom’s development of the Bloom’s taxonomy in 1956 and Fred Keller’s development of the Keller Plan in 1962, Competency-Based Education in the United States was concentrated in the workplace rather than in higher education (See Appendix B for more information on Bloom’s taxonomy and Appendix C for more information on the Keller Plan). In the late 1960s, after the development of Bloom’s taxonomy and the Keller Plan, the United States Office of Education recognized that Competency-Based Education could be used to dictate student learning. In the early 1970s, the usage of Competence-Based Education to dictate student learning expanded to higher education. Nodine (2016) characterized that there are three phases in pivoting higher education in the United States towards Competency-Based Education:

1. 1960s - Present: Innovative Teacher Education Programs
2. 1970s - Present: Vocational Educational Programs
3. 2000s - Present: Online, Hybrid, or Direct Assessment Programs Using Adaptive Learning Technology

Recently, Pace (2013) devised a model to aid higher education professionals in pivoting to Competency-Based Education. The model is presented in Table 1.

Table 1

Competency Education Continuum

	Traditional	Emerging	Competency-Based
School Culture	Learning happens inside a traditional classroom with little to no accommodation of student interests and learning styles.	Educators make limited accommodation for student interests by incorporating real-world experiences and partners into the classroom.	Students choose from a wide range of learning experiences at school, online, and in their community. Educators work with diverse partners and students to piece together individual learning pathways that accommodate student interests and learning styles.
Learning Progression	Students are expected to master grade level college and career ready standards.	Students are expected to master grade level college and career ready standards and transferable skills.	Students are expected to master competencies aligned to college and career ready standards. Each
	Traditional	Emerging	Competency-Based

Learning Progression			competency has clear, transferable learning objectives.
Learning Pace	Students advance at the instructor's pace regardless of whether they mastered the learning objectives or need additional time.	Students may take accelerated courses if they demonstrate readiness. Students receive specialized support when they fall behind peers. Educators continually group students to encourage peer learning and maximize learning gains for all.	Students receive customized supports and accelerated opportunity both in-school and out-of-school to ensure they stay on pace to graduate college and career ready.
Instruction	Every classroom has one teacher who designs and delivers an instructional program with very	Educators engage in some collaboration across teams and content areas to align and differentiate	Educators work collaboratively with each other, community partners, and students to
	Traditional	Emerging	Competency-Based

Instruction	little differentiation for individual students.	instruction based on real-time feedback on student performance.	develop a unique learning plan for every student based on student interests, learning styles, and real-time data.
Assessment System	Assessment instruments are used to set times to evaluate and classify students, not to guide instruction. Students have one opportunity to take the summative assignment at the end of the year.	Educators use formative assessment instruments when they believe students are ready to demonstrate mastery. These assessments help educators tailor instruction so that more students are ready to master the summative assessment at the end of the year.	A comprehensive assessment system is an essential part of the learning system. Formative assessments guide daily instruction and student selection of customized learning opportunities. Summative assessments show mastery of competencies. Students take these
	Traditional	Emerging	Competency-Based
Assessment System			Assessments when they are already and have multiple

			opportunities to demonstrate mastery.
Grading Policies	Grades are norm-referenced, reflect mastery of course standards, and are typically based on weighted quarters and a final exam.	Grades reflect mastery of course standards and skills and are typically based on weighted quarters and a final exam or project. Students have multiple opportunities to demonstrate mastery of required coursework.	Grades reflect the degree of mastery of competencies ranging from advanced to not yet competent. When students do not earn course credit their record indicates competencies that need to be re-learned instead of the entire course.

Note. The model requires higher education professionals to use their current teaching policies to pivot towards Competency-Based Education.

How much money (in United States Dollars, or USD) of its available federal resources has the United States allocated towards Competency-Based Education, and what effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes? Given the extensive history of Competency-Based Education, although there exists comprehensive research conducted on Competency-Based Education, there lacks the proper allocation of federal resources towards it. Thus, if the United States properly allocates its available federal resources (USD) towards Competency-Based Education, then it can have a strong effect on youth career outcomes.

Materials & Methods

In order to test the hypothesis of “If the United States properly allocates its available federal resources (United States Dollars, or USD) towards Competency-Based Education, then it can have a strong effect on youth career outcomes,” credible archival literature on Competency-Based Education in the United States, including various primary and secondary sources while fixating on primary sources, will be used to conduct the study because extensive research has been conducted on Competency-Based Education and the research has been made public through online databases. Considering that the research question of “How much money (in United States Dollars, or USD), of its available federal resources, has the United States allocated towards Competency-Based Education, and what effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes?” has two parts to it — a combination of qualitative and quantitative methods have been adopted to answer both parts of the question. Qualitative methods will be adopted to answer the second part of the research question, “What effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes?” On the other hand, quantitative methods will be adopted to answer the first part of the research question, “How much money (in United States Dollars, or USD), of its available federal resources has the United States allocated towards Competency-Based Education?” Ideally, the varied perspectives will be collated to have an inductive understanding of the need of Competency-Based Education.

Results

By using a combination of qualitative and quantitative methods from archival research to not only answer the research question, “How much money (in United States Dollars, or USD), of its available federal resources has the United States allocated towards Competency-Based Education, and what effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes?,” but to also test the hypothesis, “If the United States properly allocates its available federal resources (USD) towards Competency-Based Education, then it can have a strong effect on youth career outcomes. Results found that in 2020, the United States government — comprising federal, state, and local governments — spends \$720.9 billion USD, funded by local property taxes and state governments, on education for students in primary and secondary schools, or K-12 schools. Handson (2020) constructed a table to visualize a comparison between the amount of money (USD) that the United States government allocated per student for their education and how much money (USD) they spend per student for their education. A visualization of this comparison is provided in Table 2.

Table 2

Educational Spending in Public Schools

Rank	State	Funding Per Pupil	Spending Per Pupil	Differential
1	New York	\$28,228	\$24,040	\$4,188
2	District of Columbia	\$31,280	\$22,759	\$8,521
3	Connecticut	\$23,135	\$20,635	\$2,500
4	New Jersey	\$22,424	\$20,021	\$2,403
5	Vermont	\$21,614	\$19,430	\$2,274
6	Alaska	\$19,017	\$17,726	\$1,291
7	Massachusetts	\$20,581	\$17,058	\$3,522
8	New Hampshire	\$18,667	\$16,893	\$1,774
9	Pennsylvania	\$20,435	\$16,395	\$4,040

10	Wyoming	\$19,435	\$16,224	\$3,212
11	Rhode Island	\$18,628	\$16,121	\$2,507
12	Illinois	\$18,652	\$15,741	\$2,911
Rank	State	Funding Per Pupil	Spending Per Pupil	Differential
13	Delaware	\$18,034	\$15,639	\$2,396
14	Hawaii	\$18,095	\$15,242	\$2,853
15	Maryland	\$17,793	\$14,762	\$3,031
16	Maine	\$15,996	\$14,145	\$1,851
17	North Dakota	\$16,269	\$13,758	\$2,511
18	Ohio	\$15,321	\$13,027	\$2,294
19	Washington	\$15,380	\$12,995	\$2,385

20	Minnesota	\$15,571	\$12,975	\$2,597
21	California	\$14,819	\$12,498	\$2,321
22	Nebraska	\$14,138	\$12,491	\$1,647
23	Michigan	\$14,741	\$12,345	\$2,396
24	Wisconsin	\$14,741	\$12,285	\$1,674
25	Virginia	\$13,169	\$12,216	\$954
26	Oregon	\$14,592	\$11,920	\$2,672
Rank	State	Spending Per Pupil	Funding Per Pupil	Differential
27	Iowa	\$13,774	\$11,732	\$2,041
28	Montana	\$13,097	\$11,680	\$1,417
29	Kansas	\$13,406	\$11,653	\$1,753

30	Louisiana	\$13,118	\$11,452	\$1,666
31	West Virginia	\$13,645	\$11,334	\$1,311
32	Kentucky	\$12,444	\$11,110	\$1,333
33	South Carolina	\$13,438	\$10,085	\$2,582
34	Missouri	\$12,866	\$10,810	\$2,055
35	Georgia	\$12,304	\$10,910	\$1,494
36	Indiana	\$12,866	\$10,262	\$2,604
37	Colorado	\$12,371	\$10,202	\$2,169
38	Arkansas	\$11,589	\$10,139	\$1,450
39	South Dakota	\$11,961	\$10,073	\$1,887
40	Alabama	\$10,871	\$9,696	\$1,175

Rank	State	Funding Per Pupil	Spending Per Pupil	Differential
41	Texas	\$12,122	\$9,606	\$2,516
42	New Mexico	\$11,906	\$9,582	\$2,324
43	Tennessee	\$10,547	\$9,544	\$1,004
44	Nevada	\$10,983	\$9,417	\$1,565
45	North Carolina	\$9,931	\$9,377	\$554
46	Florida	\$10,715	\$9,346	\$1,369
47	Mississippi	\$10,001	\$8,935	\$1,067
48	Oklahoma	\$9,548	\$8,239	\$1,310
49	Arizona	\$9,645	\$8,239	\$1,406
50	Idaho	\$8,980	\$7,771	\$1,210

51	Utah	\$9,158	\$7.628	\$1,530
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Note. Although the District of Columbia is not a state, it is listed as a state in the table. The table is modified from the original table constructed by Hanson, with the “Funding Per Pupil” and “Spending Per Pupil” columns being swapped in the original table. Furthermore, the table uses green and red text in the “Funding Per Pupil,” “Spending Per Pupil,” and “Differential” columns to visualize that the amount (USD) in the “Spending Per Pupil” column is subtracted from the amount in the “Funding Per Pupil” to determine the differential. Overall, the Spending Per Pupil is less than the Funding Per Pupil in each state, hence why the text in the “Differential” column is green.

Despite the fact that there is a definite number on the amount of money (USD) that the United States government spends on education in primary and secondary public schools, plausible that this amount may fluctuate from year to year, there lacks research conducted on the amount of money that the United States government has allocated towards Competency-Based Education. For this reason, it is concluded that there is insufficient research to determine the amount of money that the United States government has allocated towards Competency-Based Education.

Discussion

To reiterate, the research paper proposed the question of “How much money (in United States Dollars, or USD) of its available federal resources has the United States allocated towards Competency-Based Education, and what effect(s) can the proper allocation of the available federal resources for Competency-Based Education have on youth career outcomes?” and postulated that “If the United States properly allocates its available federal resources (USD) towards Competency-Based Education, then it can have a strong effect on youth career outcomes.”

This research paper had two aims, first being how much the United States government had allocated towards Competency-Based Education for youth, and the second being the impact that this form of education can have on youth and their career outcomes. Through a series of quantitative and qualitative methods, these two aims were explored. A limitation of this archival research was data inaccessibility; while the amount of money the United States government has allocated towards education was found, the specific amount allocated towards Competency-Based Education was not due to lack of data. Furthermore, various forms of learning models and their impacts on the quality of education were examined. Additional research in the area of Competency-Based Education is required in order to understand just how much is being spent in this sector every year, as well as how funds can be better allocated. As a next step, more quantitative data can provide meaningful insights within this field.

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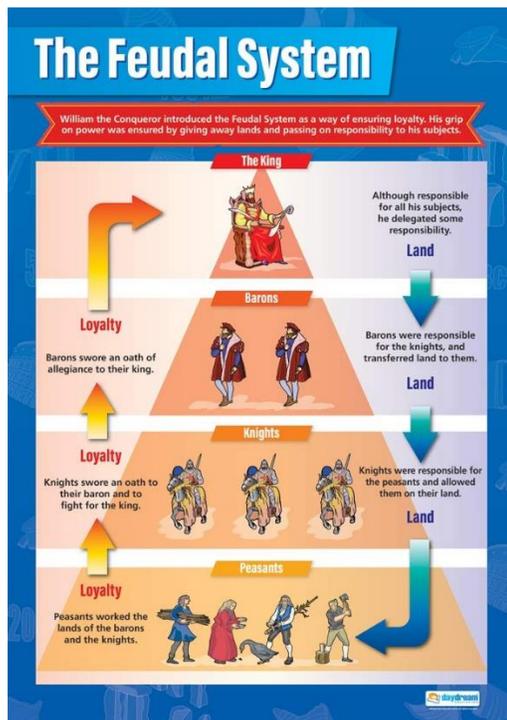
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Appendix A: European Feudal System

Figure #1

A Pyramid Chart of the European Feudal System During the Middle Ages



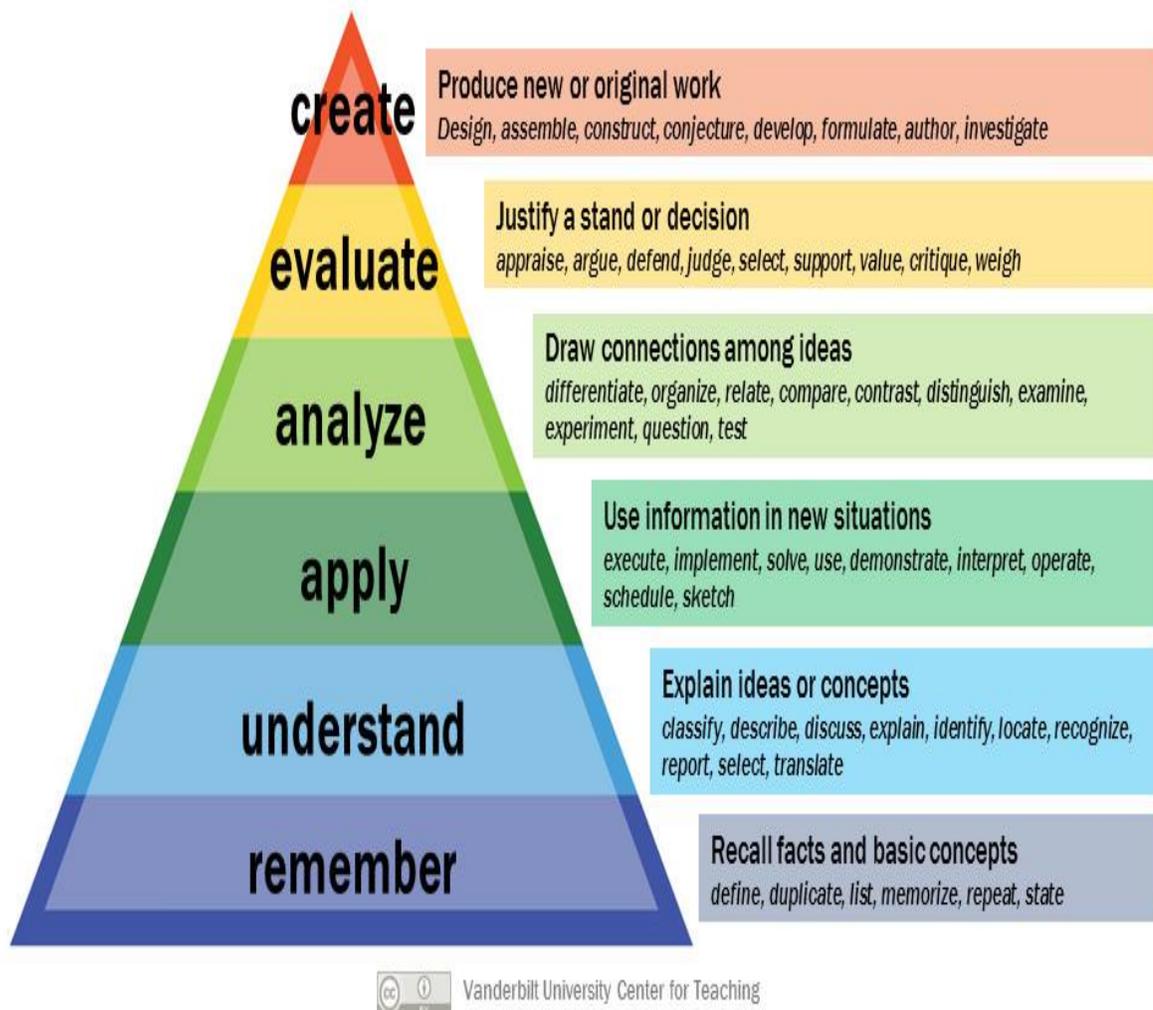
Note. Barons often use the title “Lord” to denote themselves.

Appendix B: Bloom's Taxonomy

Figure #2

A Pyramid Chart of Bloom's Taxonomy

Bloom's Taxonomy



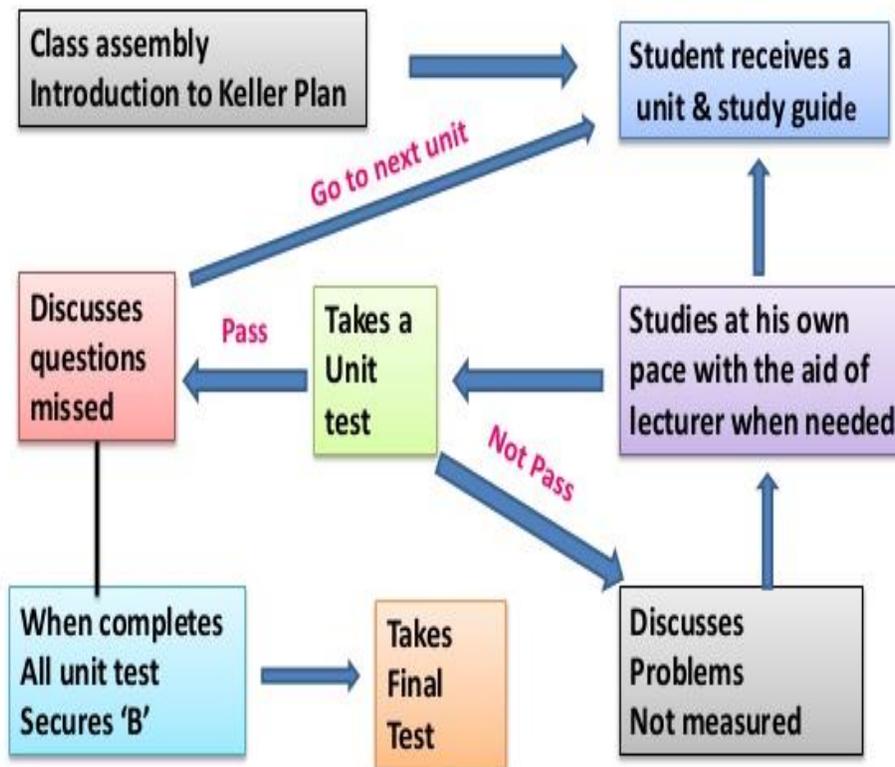
Note. The higher levels of the pyramid are dependent on the lower levels of the pyramid.

Appendix C: Keller Plan

Figure #3

A Flow Chart of the Keller Plan

Flow Chart of Keller Plan



Note. The Keller Plan is alternatively referred to as the Personalized System of Instruction (PSI).