INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH
2023, Vol. 4, No. 12, 4168 – 4181
http://dx.doi.org/10.11594/ijmaber.04.12.02

Research Article

Technical Curriculum Implementation and Evaluation Framework

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Article history:
Submission October 2023
Revised November 2023
Accepted December 2023

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ABSTRACT

This study was a response to unemployment, a pervading social problem. One of the solutions to the problem was the training of a workforce that makes them employable. To implement this solution, efforts from all sectors of society need to align. This study takes off from the vantage point of vocational training centers. Specifically, this was about the formulation and application of a technical curriculum implementation and evaluation framework. It identified curriculum implementation components and their subsequent details from actual curriculum-related practices of a group of vocational training centers. Components were identified through observations, informal interviews, and curriculum-related document reviews. Based on streamlined components, a survey questionnaire was made and was conducted to assess the levels of practice of identified curriculum implementation components in the training centers through the responses of technical directors and instructors. Analysis of Variance (ANOVA) was used to test whether there was a significant difference between the ratings from the two groups of respondents. The following items were the conclusions. Curriculum implementation components were streamlined, formulating an alternative cyclical mechanism for vocational training curriculum implementation and evaluation. Competency transfer and competency assessment were emphasized due to their importance in a vocational training program. There was no significant difference in the responses of the two groups of respondents. Finally, it was found that the training centers can still improve at least a level in all components of curriculum implementation which implies the need for all training personnel to address areas of concern.

Keywords: *Competency assessment, Competency transfer, Curriculum implementation and evaluation, Industry Relations, Training goals*

How to cite:
Narsico, L. O. & Narsico, P. G. (2023). Technical Curriculum Implementation and Evaluation Framework. *International Journal of Multidisciplinary: Applied Business and Education Research*. *4*(12), 4168 – 4181. doi: 10.11594/ijmaber.04.12.02

Introduction

Unemployment stands as a prominent challenge in contemporary society, giving rise to a cascade of associated issues. There has been a shift in the perspective in looking at employment from the person's point of view to a societal one. Instead of seeing it as a failure to find a job or redundancy, it is now viewed as a cultural situation and is caused by institutions of work and shaped by government policies (Boland & Griffin, 2023). From a cultural perspective, a study revealed that in some contexts being female, single, young, disabled, and living in urban areas increases the risk of unemployment and inactivity (Niaré & Mariko, 2023). With the same line of thought, a study revealed that in some contexts unemployed individuals are stigmatized and socially discriminated (Shah et al., 2020). In another perspective, a study showed that social situations like economic growth, debt, labor force, and population, cause unemployment (Gómez & Irewole, 2023). Following the same circumstance, a study showed that domestic policies, demographic, and global economic factors affect unemployment (Peng, 2023). And to make matters worse, a study found that unemployment causes massive and persistent wage declines (Jost, 2021). Given the circumstances that unemployment is a social situation, the responsibility rests on policymakers and other entities who are in a position to make improvements (Popova, et. al., 2023). Speaking of policy, a study showed that public spending was seen as the main cause of rising unemployment (Soukaina, 2023). This implies, that even policymakers who were said to have the power to improve the situation, could be causing the problem. Following the same line of thinking, a study revealed that in some contexts, government inefficiency has a long-lasting effect on poor human development which includes the issue of unemployment (Akinyele et al.). From another perspective, Gillespie (2019) pointed out that unemployment represents a waste of resources and means the economy is not producing as much as it could. And speaking of the waste of resources through unemployment, this study seeks to contribute to the alleviation of unemployment through vocational training. Huynh and Vo's (2023) research on unemployment underscores the critical role of education, particularly in economically disadvantaged nations, where prioritizing education is essential for cultivating a job-ready populace. Education, recognized as a pivotal catalyst for economic advancement, enhances the labor force by imparting knowledge and skills aligned with industry needs, subsequently fostering employment and higher wages (Pal, 2023). The implementation of vocational training, however, poses various components and challenges that demand concerted efforts from all stakeholders to establish high-quality training programs (Kagara et al., 2020). Poorly executed programs may result in graduates lacking competencies meeting industry standards. Research on modern models of public-private partnerships in vocational education emphasizes the necessity for collaboration between technical education institutions and industry to produce graduates equipped with relevant qualifications (Radkevych, 2023). The imperative for coordination among stakeholders prompted the Philippine government to enact Republic Act No. 7796 in 1994, establishing a government agency tasked with harmonizing initiatives in vocational training. From the perspective of vocational training centers, challenges include compliance with government standards, the development of instructor qualifications for instructional purposes and curriculum design, and securing resources for sustained operations (Satriyanto, 2023). This study revolves around curriculum implementation and improvement mechanisms aimed at ensuring the quality of graduates. As highlighted by Suseno (2023), the linkage between graduates and industry, coupled with aligning training outcomes with industry requirements, reinforces the quality of graduates. The study delves into the identification of curriculum implementation practices within a group of training centers, streamlining components to facilitate implementation, evaluation, and improvement processes. The primary focus lies in enhancing the employability of training graduates, thereby ensuring the tangible impact of the technical curriculum on each trainee's livelihood. This impact, in turn, extends positively to families, communities, and the nation in the long run.

Research Questions

The study aimed to discern the curriculum implementation components within training centers and subsequently identified the specific details of each component. An evaluation of the training centers was then conducted based on these identified curriculum implementation components to pinpoint potential areas for improvement. The study sought to address the following questions:

1. What comprised the technical curriculum implementation and evaluation components, and how were they interrelated?
2. How did the levels of practice of curriculum implementation components vary from the perspectives of both instructors and technical directors?
3. Were there significant differences in the responses between instructors and administrators concerning the practice of curriculum implementation components?
4. Drawing from the study's findings, what are the implications for enhancing the practice of curriculum implementation components?

Methods

The method used to formulate survey questions about curriculum implementation components was qualitative. This approach involved direct observations of practices within training centers, informal interviews with personnel, reviews of documents related to curriculum implementation, analysis of trainees' projects, examination of the trade-test performance history of graduates, and exploration of records related to job placements. The identified components underwent a streamlining process, and items for each component were delineated using the same qualitative methods. First-hand experiences, particularly from the perspectives of training directors and instructors, proved invaluable in gaining insights into these curriculum implementation practices.

To collect data on the practice of curriculum implementation components, a descriptive survey methodology was employed. Respondents provided input through questionnaires designed to gather responses to straightforward questions, all based on the actual practices of the training centers. While other training centers not included in the study, may share similar curriculum implementation components, it is important to note that specific practices may vary. To ensure clarity, a pre-survey session was conducted to help respondents understand the questions thoroughly. The study focused on four technical training centers in the Philippines, with three located in Cebu and one in Mati, Davao. Respondents were categorized into two groups: instructors and technical directors, with the specific number of respondents outlined in Table 1.

Table 1. Respondents

	Students	Teachers
Respondents	23	4
Grand Total	**27**	

Permission to collect data was obtained before the study. The weighted mean for each item across all instruments was calculated. An additional step involved determining the weighted mean for each item within the instruments. To assess whether a significant difference existed between the ratings from the two groups of respondents, Analysis of Variance (ANOVA) was employed.

Results and Discussions

Technical Curriculum Implementation and Evaluation Framework

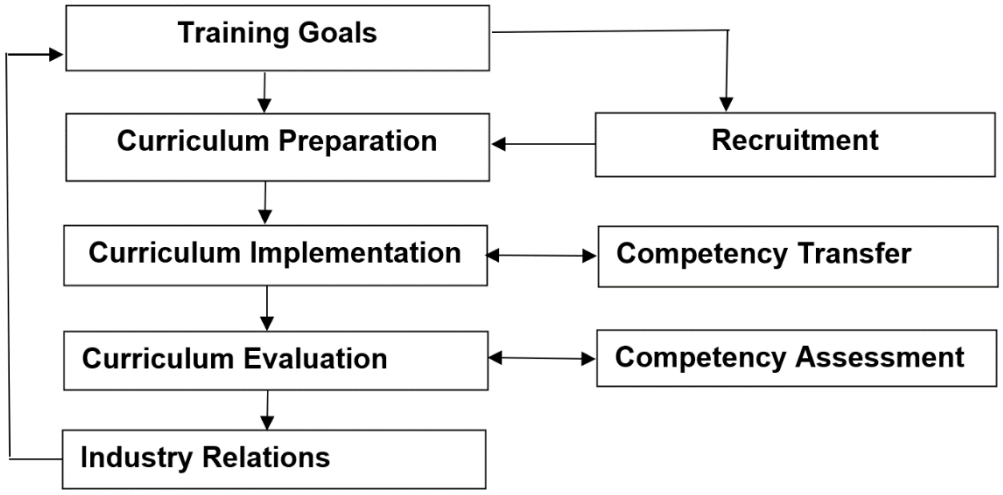

Figure 1. Technical Curriculum Implementation and Evaluation Framework

Training Goals

The initial component within the technical curriculum implementation framework of training centers is the establishment of training goals. These goals serve as the foundation for curriculum development, guide the recruitment process, and form the basis for evaluations. In line with best practices, evaluations should be formative and constructive, aiming for a positive impact on the organization (Duan et al., 2023). A study on the role of goal congruence on problems in employee training found that congruence of goals improves an organization's achievements and communication among members reinforces them (Madhavan et al., 2023). Training goals should align with both government and industry standards, ensuring clarity for all stakeholders. In the context of training centers, emphasis is placed on aligning training goals with the individual objectives of instructors. Training goals set the urgency of training. A study on the relationship between achievement goals and the attention of university instructors found that training goals relate to trainee interest (Kücherer et al., 2020). A study on the impact of goal attainment and training goals on overall training satisfaction among vocational education and training completers revealed there is a positive relationship between training goal achievement and training satisfaction of students (Skues et al., 2019). A study on multicultural teaching efficacy and the cultural intelligence of teachers showed that learning goal orientation improves teaching efficacy in a multicultural context (Kang et al., 2019).

Curriculum Preparation

The subsequent component involves curriculum preparation, which encompasses aligning training plans with relevant competencies. This process verifies whether materials and facilities meet industry standards and ensures that instructors receive pertinent training. When measures were taken to align the curriculum with industry standards and requirements, it allowed training centers to provide experiential learning. In line with experiential learning, a study on promoting youths' skills acquisition through experiential learning theory in vocational education and training found that training programs that engage trainees with hands-on activities, help trainees acquire real-world skills and gain appropriate work experiences and competencies for future employment (Mayombe, 2023). The same study asserts that vocational education and training programs that focus on experiential learning, improve the lives of disadvantaged and unemployed youths. A study on the preparedness of teachers for implementing a competency-based curriculum system of education

supported the necessity to have very well-prepared teachers before curriculum implementation (Okeyo & Mokua, 2023). The same study asserted that teacher training should not be done hurriedly and should not be done only for show. Beyond technical preparations for instructors, the inclusion of training on organizational citizenship behavior is recommended to enhance overall performance (Sianturi et al., 2023). Additionally, a training needs assessment for candidates is incorporated, as such assessments have been shown to contribute to the effectiveness of skills training programs (Mayombe, 2020).

Trainee Recruitment

The next component was recruitment of trainees and where needed, recruitment of new instructors. This included clarity of recruitment policies. In this component, recruits were ascertained for their compatibility with training goals and curriculum requirements. Recruits should be hired based on their abilities and personality traits that are consistent with the requirements of the training. A study on meritocracy, personality traits, and recruitment showed that meritocracy and personality traits had an impact on the recruitment process (Baroun, 2021). The same study asserts that meritocracy is more important than personality traits in the recruitment process. The alignment of goals with recruitment processes and requirements facilitated the accomplishment of training goals (Bans-Akutey et al., 2021). Recruitment administrators can facilitate the process by setting up a system that includes the creation of organizational profiles, and postings for openings among other items (Gowda, 2023). In cases where recruitment methods are inadequate, problems may arise. A study on the impact of the changes to United Kingdom psychiatry training recruitment revealed that the removal of certain selection methods for recruitment limited their ability to choose the best candidate for the training place (Challinor & Whyler, 2022). Recruitment in recent times has made use of advanced technology that optimizes recruitment strategies (Biea et al., 2023). Although social media recruitment has immense advantages care has to be taken to disseminate credible, relevant, and sufficient information through a suitable communication mode to ensure credibility and satisfaction on the part of would-be employees for companies and trainees for training centers (Muduli & Trivedi, 2020).

Curriculum Implementation

The subsequent component in the technical curriculum implementation framework is curriculum implementation. This stage involves executing all activities identified during the preparation stage, ensuring the fulfillment of every personnel's roles in the training process. Additionally, this component contributes inputs for competency transfer and curriculum evaluation. Some factors affect curriculum implementation. A study on factors influencing curriculum implementation showed that the level of education offered, characteristics of the curriculum, institutional traits, and the school's external environment are among the factors that affect curriculum implementation (Rudhumbu & Elize Du Plessis, 2020). A study on curriculum management strategies and effective implementation revealed that students' mastery goals, effective classroom instruction, and learning evaluation all helped to improve curriculum implementation effectiveness (Abdullahi, 2022). With all these factors coming into play, comes the need for leadership in curriculum implementation (Xiong et al., 2019). In another perspective, teachers have key roles to play in facilitating the implementation of the new school curriculum (Katshuna & Shikalepo, 2023). A study on the challenges faced in the implementation of a curriculum showed that a positive teacher attitude and successful curriculum implementation come with appropriate teacher training and involvement development (Hussein, 2023). Moreover, from another perspective, trainees by simply being part of the training process, significantly increase their perceived goal attainment and their hope levels (Barrios et al., 2019). A noteworthy consideration impacting curriculum implementation is the concept of the hidden curriculum, encompassing values, behaviors, and norms persisting in the learning environment, which can positively or negatively influence the process (Matorevhu & Madzamba, 2022).

Competency Transfer

The next component of the technical curriculum implementation and evaluation framework is competency transfer. It is an extension of curriculum implementation. It is emphasized due to its importance in the technical training process. If trainees do not acquire the necessary competency during training, then training should have failed in its objective. This aspect ensures that training methods and facilities facilitate effective competency transfer. An empirical study of factors influencing training transfer in the management training intervention showed that trainee abilities, training environment, and training design are positively associated with training transfer (Yaqub et al., 2021). About the training environment, a study on social support for training effectiveness showed that the support of co-trainees and instructors is identified as a significant factor in training transfer, fostering a positive learning environment that maximizes competency transfer (Gautam et al., 2023). A study focusing on experiential learning in vocational education and training showed that experiential learning in vocational education and training programs helped trainees gain real-world skills and provided work experiences and competencies for their future employment (Mayombe, 2023). A study on the effectiveness of problem-based learning in technical and vocational education revealed that students using the hands-on approaches tend to obtain the greatest benefits from experiential, student-centered learning approaches (Jabarullah & Iqbal Hussain, 2019). With the advancement of modern technologies, the integration of simulation as an emerging training tool enables instructors to analyze factors contributing to competency transfer, allowing for timely and accurate improvements (Shabunin et al., 2023b). Moreover, the use of Virtual Reality (VR) technology is another emerging tool that holds the potential for enhancing human performance in various training settings (Yoon et al., 2023). With the array of factors, methods, and modern tools, the responsibility of making competency transfer happen rests on the responsibility of training institutions and teachers.

Curriculum Evaluation

Curriculum evaluation included all the aspects of curriculum especially the support courses that were consistent with knowledge, attitudes, and related skills. This also included the processes that examined all aspects of the curriculum from monitoring to improvement. The presence of curricular guidelines and quality standards can facilitate curriculum evaluation (Mohamed, 2023). Another way of evaluating the curriculum was by aligning all indicators of all aspects of curriculum implementation so that training goals were accomplished (Thoriq & Mahmudah, 2023). A study on curriculum evaluation pointed out that areas of improvement were revealed through an evaluation given at the end of curriculum implementation (Piliano et al., 2023). The same study asserts that a better approach to curriculum evaluation was to conduct it during and after implementation. Another perspective on curriculum evaluation is from the learners' point of view. A study on the appraisal of social work curriculum showed that learners perceive a curriculum to be obsolete in addressing contemporary concerns (Simon, 2021). Learners use what they learned from the curriculum and their perspectives on curricular effectiveness are based on experience. Another perspective in curriculum evaluation was to determine whether the methodologies used in curriculum implementation led students to perform what was expected of them by their target industries (Ma et al., 2023). Moreover, a possible curriculum evaluation result was the identification of problems that derailed curriculum implementation. A study on an assessment of the curriculum implementation process revealed that educated and competent teachers were inadequate and poor learning environments were present (Olatunji & Ajero, 2022).

Competency Assessment

Competency assessment was an extension of curriculum evaluation. This was given focus in the implementation of a technical curriculum because of its importance. This ascertained that competencies were truly acquired by trainees. This assured trainees' performance in licensure examinations or trade tests provided by the government. In this component, trainees

were assured to perform the necessary competencies in the workplace. Here, what is important is a positive training outcome, and the other factors serve as its support. A study on the e-training impact on trainee experience and self-assessment showed a good example of this situation (Kumar & Kumar, 2023). The same study revealed that training infrastructure, organizational support, trainer abilities, training content, materials, and design impact trainee experience which in turn affects learning outcomes. The implementation of competency assessment begins with identifying the most significant current and future skill requirements of industries, followed by determining critical skill gaps and harnessing the help of vocational education and training, tertiary education, and other kinds of training curricula. A study on identifying the skills requirements related to industrial symbiosis and energy efficiency illustrated the mentioned dynamics (Akyazi et al., 2023). The alignment of training needs, training gaps, and curriculum facilitated by industries, academe, and government pave the way for the formulation of a competency assessment tool. In line with the mentioned alignment, a study proposed strategies for stakeholders to ensure that fresh graduates meet industry demands and assist learning institutions in developing a curriculum that suits the industry's needs and requirements (Marthad Al-Mughairy & Preeti Shrivastava, 2022). In line with the formulation of a training assessment tool, a study on developing a tool for skills assessment evaluated a comprehensive tool enabling the assessment of technical skills (Bidonde et al., 2022). The same study asserted that the formulated tool even reveals the strengths and weaknesses of examinees. Moreover, concerning the performance of trainees in the workplace, training that happened in both training centers and companies which is otherwise termed dual training was more effective than training that happened only in school settings (Brunetti & Corsini, 2019).

Industry Relations

Next to curriculum evaluation is industry relations. Schools and industries should coordinate so that graduates perform according to standards. Vocational schools and industries should work together to produce competent workers (Mahmudah & Santosa, 2021). A study on craftsman training and the construction industry pointed out the relevance of identifying the critical areas for efficient craftsman training (Ekanem et al., 2023). The same study pointed out that the emphasis on critical areas leads to the priority of appreciating and developing workers to benefit from the training which means that training leads to performance in the job. A study on the support of education and training systems for the manufacturing industry workforce revealed the core dimensions of a supportive education and training system which are partnerships, pedagogy, and prospects (Laundon et al., 2023). The same study described the partnership as the collaboration among vocational education and training institutions, universities, government, industry, high schools, and private training providers. The same study also described pedagogy. This means having a comprehensive curriculum that includes technological skills and capabilities, experiential delivery modes, online learning, on-the-job training, flexible delivery, and innovative training methodologies. Furthermore, the same study described prospects to include assessment and planning to respond to industry trends, development of associated qualifications and skills, and investments required to meet future industry needs. Laundon et al. (2023), painted a complete picture of how industry relations should take place, and it is the job of training centers on how they should come into the picture. In the same line of thought, a study on the partnership management between vocational schools with the world of business and industry pointed out that training centers and industry have common goals which include training quality and placement of graduates in the workplace (Ubaidah et al., 2021). New inputs for improvements from external collaborations with various stakeholders, should form as basis for training goal revisions. In summary, the technical curriculum implementation framework began with training goals that dictate both preparation and recruitment. Which was followed by curriculum implementation along with a focus on competency transfer. Which was then followed by curriculum evaluation with a focus on

competency assessment. Finally, new directions taken from industry relations interactions with other stakeholders, form bases for revisiting training goals, and so on. Curriculum implementation, being dynamic, the whole framework serves as a mechanism for continuous improvement.

Extent of the Practice of Curriculum Implementation Components

Table 2. Extent of the Practice of Curriculum Implementation Components
n = 27

	Factors	Instructors		Training Directors		Composite	
1	Training Goals	3.60	OP	4.21	AP	3.91	OP
2	Recruitment Practices	3.91	OP	4.44	AP	4.17	OP
3	Curriculum Preparation	3.59	OP	3.85	OP	3.72	OP
4	Curriculum Implementation	3.87	OP	3.83	OP	3.85	OP
5	Curriculum Evaluation	3.83	OP	3.78	OP	3.81	OP
6	Competency Transfer	3.75	OP	3.75	OP	3.75	OP
7	Competency Assessment	3.70	OP	3.29	IP	3.50	OP
8	Industry Relations	3.69	OP	3.31	IP	3.50	OP
	Average Mean	3.74	OP	3.81	OP	3.78	OP

Legend: 4.21–5.00 Always Practiced (AP); 3.41-4.20 Often Practiced (OP); 2.61–3.4 Intermittently (IP); 1.81-2.60-Seldom Practiced (SP); and1.00-1.80-Never Practiced (NP)

The scores evaluating the practice of curriculum implementation components, assessed by both instructors and training directors, are outlined in Table 2. Instructors consistently rated all components of curriculum implementation as 'often practiced.' In contrast, directors rated training goals and recruitment practices as 'always practiced.' The level of awareness among technical directors regarding training goals and recruitment practices appears more optimistic than the instructors' perception. This difference can be attributed to the fact that technical directors are more directly involved in training goals and recruitment, suggesting a more insightful perspective. Competency assessment and industry relations are marked as 'intermittently practiced.' The awareness of technical directors regarding competency assessment and industry relations is more pessimistic than that of the instructors. This difference is linked to the fact that technical directors are more directly engaged in the external linkages of training centers, implying a more realistic awareness of these aspects. The remaining components received ratings of 'often practiced.' In summary, the composite means indicate that all curriculum implementation components were consistently rated as 'often practiced.'

Particular attention needs to be directed towards competency assessment and industry relations because these components are rated as "intermittently practiced" by the technical directors. These aspects are pivotal determinants of the effectiveness of curriculum implementation. Competency assessment gauges the translation of training into actual work performance. A study by Chapagain et al. (2022) in a similar setting emphasized the direct correlation between training effectiveness and work performance. Regarding industry relations, feedback from companies plays a crucial role in enhancing the implementation of training programs, leading to graduates who excel in the workplace (Hung et al., 2023). This underscores the importance of incorporating inputs from companies into the training process.

Moreover, to ensure the production of employable graduates, collaboration between schools and industries is imperative. Schools may need to redesign their curricula as necessary, aligning them with industry needs (Jowah & Beretu, 2019). This collaborative effort ensures that educational programs meet the demands of the job market and contribute to the development of highly skilled and job-ready graduates.

Test for Significant Difference of the Responses Instructors and Administrators

Table 3. Test for Significant Difference of the Responses of Instructors and Administrators
n = 27

	Factors	Total Number of Questions	Questions with Significant Differences	%
1	Training Goals	6	0	0%
2	Recruitment Practices	4	0	0%
3	Curriculum Preparation	12	0	0%
4	Curriculum Implementation	13	0	0%
5	Curriculum Evaluation	9	0	0%
6	Competency Transfer	17	0	0%
7	Competency Assessment	13	0	0%
8	Industry Relations	4	0	0%

The results of the test determining a significant difference between the responses of instructors and technical directors on their assessment of curriculum implementation components are presented in Table 3. Despite apparent differences in responses, as depicted in Table 2, the test results indicate that the disparities in all components were not statistically significant. This strengthens the agreement between instructors and technical directors in their collective effort to enhance curriculum implementation. The composite ratings for all components were consistently labeled as "often practiced," signaling a potential for improvement in performance levels. This implies the need for all training personnel to address areas of concern.

In terms of curriculum improvement, the success indicator lies in its ability to produce competent graduates for industries. To achieve this, the imperative to train students with relevant skills and hands-on experience was underscored (Owuondo, 2023). Moreover, simplifying the broad curriculum into its essential details was identified as crucial for identifying and addressing skills gaps (Kelly et al., 2023). Governments play a pivotal role in facilitating curriculum improvement by establishing standards and certification systems.

From an alternative perspective, the apprenticeship training program was identified as a practice that could contribute to bridging the skills training gap. However, clarifying policies in this practice becomes essential to ensure the assurance of trainees' interests (Ravichandran, 2023). By addressing these aspects, institutions can not only enhance curriculum implementation but also better prepare students for success in industry settings.

Conclusions

Based on the observations, informal interviews with informants, and document reviews that were used to determine the components of curriculum implementation and its details, based on the assessments of respondents on the extent of the practice of curriculum implementation components, based on the results on the determination of whether the answers of the two groups of respondents were significantly different, and based on the items that related to the implications of curriculum implementation improvement, the following conclusions were deduced.

1. An alternative cyclical mechanism for vocational training curriculum implementation and evaluation was formulated.
2. Competency transfer and competency assessment were emphasized due to their importance in a vocational training program.
3. Based on the composite means of the two groups of respondents, all the components of curriculum implementation were “often practiced.”
4. There was no significant difference in the responses of the two groups of respondents.
5. It was found that training centers can still improve at least a level in all components of curriculum implementation which implies the need for all training personnel to address areas of concern.

Recommendations

After considering the conclusions, recommendations were directed to three concerned groups of persons. These were the personnel of the training centers involved in the study, personnel of other training centers, and future researchers.

1. With all the components of curriculum implementation scored as one level lower than the highest possible rating, it was recommended to:
   a. start improvements on the components that got the lowest ratings from the technical directors and subsequently follow through with the other components and
   b. apply the suggested curriculum implementation and evaluation framework with the consideration that the included items in each component need to be revised based on the changes due to training environment circumstances, new technologies, industry requirements, and government regulations.
2. It was recommended to personnel of other training centers to consider adapting the framework for curriculum implementation and evaluation while considering that its component details vary depending on both internal and external factors.
3. It was recommended to researchers:
   a. to use the framework for curriculum implementation and evaluation formulated in the study on different technical center environments and
   b. to research teaching-learning methods that effectively facilitate competency transfer.

Acknowledgment

Special thanks to the technical directors and instructors of the four Don Bosco training centers in Cebu and Davao, Philippines for their invaluable contributions to this study.

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