Perspective of Lecturers in Implementing PISMP Science Curriculum in Malaysia’s IPG

Fauziah Hj Yahya, Abdul Rahim Bin Hamdan, Hafsa Binti Jantan, Halimatussaddiah Binti Saleh
Faculty of Education, Universiti Teknologi Malaysia, Malaysia

ABSTRACT
The article aims to identify lecturers’ perspectives in implementing PISMP science curriculum in IPG Malaysia based on teaching experience with KIPP model. The respondents consisted of 105 lecturers from 20 IPG Malaysia. The study used a questionnaire consisting of 74 items covering the four dimensions (Context, Input, Process and Product). Data collected through questionnaires were analyzed using one-way ANOVA. The study found that there was not a significant difference of curriculum goals and course objectives based on teaching experience at school. For input dimension, there was no significant difference of evaluation, content, source and pedagogy based on school teaching experience. In process dimension, there was no significant difference pedagogical process, the content and the process of assessment based on teaching experience at school. Furthermore, there was no significant difference of product dimension of science curriculum based on teaching experience at school. Based on the experience of teaching in IPG, lecturers did not have a significant difference of curriculum goals, course objectives, evaluation input, content, source, pedagogy, and evaluation process, and content process, but there were significant differences in the pedagogical input and product in the implementation of the PISMP science curriculum in IPG. Its discussions and recommendation were also discussed in this article.

1. INTRODUCTION
Teaching Baccalaureate Program (PISMP) is one of the teacher education program introduced in year 2007 by Malaysia’s Ministry of Education. This program was fully operated by Institut Pendidikan Guru (IPG). PISMP was established with its own curriculum design that is a plan of learning experience to learn and learning experience to teach in producing teacher that is professional and integrated [1]. The provided curriculum has dynamic, relevant, futuristic, responsive, holistic and integrated characteristic besides using holistic approach and theoretical application that is coherent. It is one of the effective teaching and critical experience and lifetime learning [2]. This suitable with statement [3] that curriculum is one of the important elements and vital towards education system that create future generation and well said as a component that moves the education system [4]. However, the better curriculum cannot be successful implement without the lecturer role. The effectiveness of an education system depends to the people who implement it. Teacher and lecturer is the people who implement curriculum that have important position in formal education because they will determine standard, quality and the effectiveness of education system [5]. This statement is supported by [6] stated major player which play role by total in teacher education ecology is teachers’ educator itself and aspect that should be seen carefully is teachers’ educator role itself. Lecturers as a teacher

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is a most important people and in most front row to implement all policy and planning of Ministry of Education Malaysia [1].

Every stage in education system should give attention, monitored, revised, assessed and repaired especially in aspects that has been identified has weakness, lack or already outdated. This includes the implementation of teacher education system that has been carried out at IPG in this country. Implementation of evaluation program is a follow up action after one program has been implemented. Any problem that arises in evaluation of implementation was an indication occurrence of non-conformity in educational innovation that want to be introduced [7]. Ali [3] stated that the curriculum is not a permanent entity, but it can be changed according to economy situation, social interaction, and current political issue as a context to determine curriculum goals. This situation occurs in most country that conducts education curriculum development including Malaysia. In parallel, the curriculum in Malaysia IPG should tag along the social interaction development and current political issue. This was supported by [8] that stated the curriculum should have been assessed continuously to fit in current development. Thus, the effectiveness and excellence of a curriculum can be achieved including the excellence of PISMP Science curriculum in IPG.

The involvement of executive as curriculum designer [9],[10] and training or courses regarding current curriculum [11] are important because according to [12], teachers’ educator should not only mastering and implementing the new curriculum, but they need to prepare in providing help to the students to master the curriculum requirement and prepares them for academic activities and future career. As studied by [9], without better implementation, the curriculum should not be evaluated in whatever form to measure the strength, success or weakness including implementation of Science curriculum. This study was conducted to evaluate the implementation of PISMP science curriculum by Science lecturer in IPG according to the problem statement that has been discussed. Specifically, the research objectives include: to identify PISMP Science curriculum implementation stage from context, input, process and product dimension based on perspective of IPG Science lecturers, and to identify difference perspective of Science lecturers from contexts, input, process and product dimension according to gender, academic qualification, teaching experience at school and teaching experience in IPG.

2. RESEARCH METHOD

This study used survey research with a target acquisition and explanation [13]. Acquisition refers to the data collected through questionnaire which consists 74 items using 5 point of likert scale. In the current study, population include all science lecturers that specialize in Science in IPG throughout Malaysia. Total of 140 Science lecturers from 20 IPGs were recruited as sample in this study. All the 140 Science lecturers were involved in this study because the population was too small. As stated by [13], sampling can be carried out by recruiting the whole population when the population is not big. However, there are only 105 respondents who return the questionnaires that equal to 74% of population and fulfill the criteria to perform the analysis. Inferential statistics used in this study was One-way ANOVA. Pilot study has been done prior to the actual study to acquire validity and reliability of the questionnaires. Cronbach alpha test was conducted with the value of contexts 0.97, input 0.97, process 0.98 and product 0.98 which fulfill the criteria ≤ 0.6 [14].

3. RESULTS AND ANALYSIS


One-way ANOVA was conducted to test the hypothesis Hₒ which identified the differences in implementing PISMP Science Curriculum from contexts, input, process and product dimension based on teaching experience in school. The result was shown in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Konteks Matlamat</th>
<th>Objective Matlamat</th>
<th>Assessment Input</th>
<th>Content Input</th>
<th>Resource Input</th>
<th>Pedagogy Input</th>
<th>Pedagogy Process</th>
<th>Content Process</th>
<th>Student Process</th>
<th>Content Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pengalaman Sekolah</td>
<td>F = 0.597</td>
<td>F = 0.502</td>
<td>F = 0.487</td>
<td>F = 0.340</td>
<td>F = 0.231</td>
<td>F = 0.143</td>
<td>F = 1.233</td>
<td>F = 0.530</td>
<td>F = 0.157</td>
<td>F = 0.256</td>
</tr>
</tbody>
</table>

Notes: Teaching Experience in School consist of four stage: (1) 1-5 years, (2) 6-10 years, (3) 11-15 years and (4) more than 15 years.
3.1.1. Contexts Dimension

Based on data analysed with one-way ANOVA in Table 1, there is no significant difference in curriculum goals contexts according to teaching experience in school with value of $F = 0.597$, $p = .621$. Next, based on data analysis with one way ANOVA in Table 1, context of course objective has value of $F = 0.502$, $p = .682$. This mean there is no difference in course objective from context dimension based on teaching experience in school. Therefore, it can be concluded that there is differences of Science lecturer perspective in implementation of PISMP Science curriculum from context dimension based on teaching experience in school.

3.1.2. Input Dimension

Based on data analysed using one way ANOVA in Table 1, there is no significant difference in assessment and evaluation input according to teaching experience in school with value $F = 0.487$, $p = .692$. Moreover, based on data analysed using one way ANOVA in Table 1, there is value of $F = 0.340$, $p = .797$ in content input of teaching experience in school. Thus, there is no significant difference of content input based on teaching experience in school.Besides, based on data analysed using one way ANOVA in Table 1, there is value of $F = 0.231$, $p = .875$ in source input of teaching experience in school. Thus, there is no significant difference of source input based on teaching experience in school.In addition, based on data analysed using one way ANOVA in Table 1, there is value of $F = 0.143$, $p = .934$ in pedagogy input of teaching experience in school. Thus, there is no significant difference of pedagogy input based on teaching experience in school.As overall, there is no difference in input dimension in implementation of PISMP Science curriculum for Science lecturer based on teaching experience in school.

3.1.3. Process Dimension

Based on data analysed using one way ANOVA in Table 1, there is no significant difference in pedagogy process according to teaching experience in school with value $F = 1.233$, $p = .302$. Moreover, based on data analysed using one way ANOVA in Table 1, there is value of $F = 0.530$, $p = .663$ in assessment and evaluation process of teaching experience in school. Thus, there is no significant difference of assessment and evaluation process based on teaching experience in school.Furthermore, based on data analysed using one way ANOVA in Table 1, there is value of $F = 0.157$, $p = .925$ in content process of teaching experience in school. Thus, there is no significant difference of content process based on teaching experience in school.

Overall, there is no process dimension in implementing PISMP Science curriculum for Science lecturer based on teaching experience in school.

3.1.4. Product Dimension

Based on data analysed using one way ANOVA in Table 1, there is no significant difference in product in implementation of PISMP Science curriculum for Science lecturer in IPG based on teaching experience in school with value $F = 0.256$, $p = .857$.

3.2. Differences in Implementation of PISMP Science Curriculum from Context Dimension, Input, Process and Product based on Teaching Experience I IPG

To test the result of the study regarding the hypothesis $H_2$, one way ANOVA are carried out to identify the differences of PISMP Science curriculum implementation from context, input, process and product dimension based on teaching experience in IPG as showed in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Goals context</th>
<th>Objective context</th>
<th>Assessment Input</th>
<th>Content Input</th>
<th>Resource Input</th>
<th>Pedagogy Input</th>
<th>Pedagogy Process</th>
<th>Assessment Process</th>
<th>Content Process</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Experience in IPG</td>
<td>$W = 1.032$</td>
<td>$F = 0.652$</td>
<td>$F = 1.075$</td>
<td>$W = 1.528$</td>
<td>$F = 0.895$</td>
<td>$F = 1.043$</td>
<td>$W = 3.189$</td>
<td>$W = 1.888$</td>
<td>$F = 2.888$</td>
<td>$F = 0.551$</td>
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<td>$(2) &lt; (4)$</td>
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<td></td>
<td></td>
<td>$(3) &lt; (4)$</td>
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</tbody>
</table>

Notes: Teaching Experience in IPG contain of 4 stage: (1) 1-5 years, (2) 6-10 years, (3) 11-15 years and (4) more than 15 years.
3.2.1. Context Dimension
Based on data analysed using one way ANOVA in Table 2, there is no significant difference in curriculum goals context according to teaching experience in IPG with value $W = 1.032$, $p = .387$ because value $p = .387$ is greater than 0.5 (conditional probability value). ANOVA test with Welch robust test of equality of means was used in this subdimension because its variance never show homogeneity based on Levene’s test of homogeneity of variances with value (Levene $(3, 101) = 3.614$, $p < .05$).

Furthermore, based on one way ANOVA in Table 2, it shows that course objective context has value $F = 0.652$, $p = .583$. This shows that there is no difference on course objective from context dimension based on teaching experience in IPG. Therefore, it can be concluded that there is no differences of Science lecturer’s perspective towards PISMP Science curriculum implementation from contexts dimension based on teaching experience in IPG.

3.2.2. Input Dimension
Based on data analysed using one way ANOVA in Table 2, there is no significant difference in assessment and evaluation input according to teaching experience in IPG with value $F = 1.075$, $p = .363$. Furthermore, based on data analysed using one way ANOVA in Table 2, it shows that content input according to teaching experience in IPG has value $W = 1.528$, $p = .220$. ANOVA test with Welch robust test of equality of means was used in this subdimension because its variance never show homogeneity based on Levene’s test of homogeneity of variances with value (Levene $(3, 101) = 5.041$, $p < .05$). This indicates that there is no significant different in content learning input based on teaching experience in IPG because value $p = .220$ is more than 0.5.

Furthermore, based on one way ANOVA in Table 2, it shows that source input has value $F = 0.895$, $p = .446$. This shows that there is no difference on course input based on teaching experience in IPG. Based on one way ANOVA in Table 2, it shows that pedagogy input according to teaching experience in IPG has value $F = 1.043$, $p = .377$. This indicates that there is difference in pedagogy input based on teaching experience in IPG. Overall, this indicates that there is no difference in input dimension in PISMP Science curriculum implementation for Science lecturer based on teaching experience in IPG.

3.2.3. Process Dimension
Based on data analysed using one way ANOVA in Table 2, there is significant difference in pedagogy process according to teaching experience in IPG with value $W = 3.189$, $p = .032$. ANOVA test with Welch robust test of equality of means was used in this subdimension because its variance never show homogeneity based on Levene’s test of homogeneity of variances with value (Levene $(3, 101) = 6.523$, $p < .05$). Therefore, Science lecturers with teaching experience in IPG more than 15 years have better pedagogy process more than those who have teaching experience in IPG between 1-5 years, 6-10 years, and 11-15 years. Meanwhile, other teaching experience (1-5 years, 6-10 years, and 11-15 years) do not have significant difference in pedagogy process.

Furthermore, based on data analysed using one way ANOVA in Table 2, evaluation and assessment process according to teaching experience in IPG has value $W = 1.888$, $p = .044$. ANOVA test with Welch robust test of equality of means was used in this subdimension because its variance never show homogeneity based on Levene’s test of homogeneity of variances with value (Levene $(3, 101) = 4.126$, $p < .05$). This indicate that there is no significant difference in assessment and evaluation process based on teaching experience in IPG because value $p = .044$ is greater than 0.50 as required.

Moreover, based on data analysed using one way ANOVA in Table 2, it shows that content process according to teaching experience in school has value $F = 0.551$, $p = .649$. This shows that there is no difference on content process based on teaching experience in IPG.

Overall, this indicate that there is no differences in process dimension in PISMP Science curriculum implementation for Science lecturer based on teaching experience in IPG.

3.2.4. Product Dimension
Based on data analysed using one way ANOVA in Table 2, there is significant difference in implementation of PISMP Science curriculum for IPG Science lecturer according to teaching experience in IPG with value (Welch $(3, 45) = 2.888$, $p < .05$). ANOVA test with Welch robust test of equality of means was used in this subdimension because its variance does not show homogeneity based on Levene’s test of homogeneity of variances with value (Levene $(3, 101) = 3.891$, $p < .05$). Thus, it shows that Science lecturer with teaching experience in IIPG for more than 15 years have better product dimension from those who have experience 1-5 years, 6-10 years and 11-15 years in implementing Science curriculum. Meanwhile, there is no significant difference in product dimension based on other teaching experience in IPG (1-5 years, 6-10 years).
years, and 11-15 years). This indicates that there is significant difference in product dimension in PISMP Science curriculum implementation for IPG Science lecturer based on teaching experience in IPG.

3.3. Discussion

This study showed that PISMP Science lecturer in Malaysia IPG do not have differences in curriculum goals context and curriculum objective from context dimension based on teaching experience in school. For the curriculum goals based on teaching experience in school, Science lecturer do not have the differences in providing requirement of Science Education in Malaysia, goals of National Education Philosophy (Falsafah Pendidikan Kebangsaan), goals of Teacher Education Philosophy (Falsafah Pendidikan Guru), goals of Teacher Education Institute (Institut Pendidikan Guru), PISMP curriculum learning outcome, PISMP Science curriculum goals and mission and FPG vision. For the curriculum objective based on learning experience in school, Science lecturer shows that they do not have differences in imparting knowledge related to PISMP Science subject component, translating scientific skills in the PISMP Science subject component, knowledgable in Science, knowledgable in all aspect of skills in Science, achieving learning outcome of PISMP Science curriculum in accordance with student’s ability. Similar with [15] that stated context dimension are focused with the environment which changes that occur and environment problem that will be faced. In the current study, Science lecturers show the same perception in the changes that occur and the problem in environment that their faced. They also have the same perception which is the context elements serve as information provider to the input, process and product evaluation to amend or continue any program. However, lecturers need to discuss the changed that has been done and the problem that their faced together. This is important for the purpose of finding solution in assessing and amends the future program.

Moreover, it can be concluded that context element in PISMP Science curriculum of Malaysia IPG in the current study was determined by lecturer’s quality instead of their experience. This is parallel to the study done by [16] who found that there are significant influences of context components towards the quality of the people who implement the curriculum. This also similar with the study by [17] that from four aspects of evaluation, aspect of context was include in the category that are important and effective. However, environment aspects should be developed to support the successful of curriculum implementation at any place including Malaysia IPG. This is because culture was different according to different places and can influence the curriculum implementation.

The result show that the Science lecturer perception towards Ministry of Education has taken into account the community interest and country requirement as context in implementing PISMP Science curriculum was the same. This indicates that what has been carried out by lecturer is greatly support with the National Education Philosophy (Falsafah Pendidikan Kebangsaan) formulation especially in the education of children that are siding with community interests and national. Similar to the study by [18] that stated any program shuld meet the requirement of society and country. National Eucation Philosophy (Falsafah Pendidikan Kebangsaan) has been as a basis for National Education Policy (Dasar Pendidikan Kebangsaan). It should concomitant with country’s will and vision and need to be obeyed. This should be carried out to ensure the problems faced will be resolved and to undertake changes correctly. This similar with [19] that stated to plan the new program, the previous problem shold be taken into account.

Input assessment according to [20] measure the system’s ability and input from strategy aspect and source to create the compilation of result and to become as guideline in choosing the program strategy and changes that need to do. For the whole input dimension in this study, there is no significant difference in evaluation and assessment input, content input, education resource input and pedagogy input based on teaching experience of PISMP Science lecturer in school. This show that PISMP Science lecturers do not have different strategy and ource in making decision before undertake teaching and learning process eventhough they have different teaching experience in school. However, it does not mean that input element in curriculum implementation should be avoided. Input element is important and should be strengthen to fortify the teaching material, teaching strategy, teaching medium and medium of instruction that are suitable and transform into teaching and learning program. This program should be arranged completely before teaching and learning process started and can become as guideline in teaching. Thus, teacher’s knowledge and skills are the important factor in input dimension as Ministry of Education Malaysia (Azizi, 1992) has provide training in service (Latihan Dalam Perkhidmatan). Training in service (LatihanDalamPerkhidmatan) as was stated by [21] was a systematic learning process that should be provided to the teaching staff to ensure the learning process always happen to improve the knowledge and skills to fit in the current requirement and changes.

Evaluation process according to [15] and [20] was emphasized to the process that used in achieving objectives and goals of the program. This information need to be known from time to time to control the
programs’ goals. Evaluation process for the current study is teaching style of Science lecturer, teacher’s style in evaluating the project works and course followe by the lecturer. Teaching and learning strategies that are suggested to the Science Education subject is based on learning from experience. For process dimension in the current study, there is no significant difference in pedagogy skills process, education content process and evaluation and assessment process based on PISMP Science lecturer teaching experience in school. This similar with [22] who found that most of the teachers are using the same technique such as teaching in class as not too much effective as a whole. [23] stated that this happen because the teachers constantly depends on the rigid teaching strategy such as discussion, observation, class and student’s report whereas outdoor activities and the use of lab are less to be used. Although in this study the PISMP Science lecturer has used variety of strategies nd teaching method, they still have the same learning implementation process. In fact the teaching experiences in different school never differentiate the style of teaching and learning process in IPG. Thus, the method of implementation of learning process needs to be improved through training.

Furthermore, evaluation outcome and product phase according to [20], the purpose of the current evaluation is to relate the goals, context, input and process with program’s outcome. This study aims to identify the differences of implementation product of Science curriculum for Science lecturer based on teaching experience in school. There is no significant difference in PISMP Science curriculum implementation for Science lecturer in IPG based on teaching experience in school. This indicate that even though PISMP Science lecturer in Malaysia IPG has difference years of teaching experience in school, they produce the same product in implementation of Science curriculum.

Based on teaching experience in IPG, there is no difference in lecturers’ curriculum goals context, curriculum objective context, assessment and evaluation input, content input, source input, pedagogy input, pedagogy process, assessment and evaluation process, learning content process, but there is significant differences in product of PISMP Science curriculum implementation for Science lecturer in IPG based on teaching experience in IPG. This indicate that Science lecturer with teaching experience in IPG more than 15 years has better product dimension from Science lecturer that have teaching experience in IPG between 1-5 years, 6-10 years, and 11-15 years in implementing the Science curriculum. On the other hand, based on teaching experience in another IPG (1-5 years, 6-10 years, and 11-15 years), there is no significant difference in product dimension. This parallel with the study by [22] who conclude that besides using variety of presentation method, the people who implement the curriculum should make use the existing teaching experience as one of the strategy to improve the teaching outcome. Therefore, PISMP Science lecturer in IPG should changing their mind and sharing their experience with their colleagues as one of the factor to make their teaching more effective. They should acknowledge the sharing of experience with colleagues or other lecturers greatly influenced the improvement of everyday teaching and learning. They can improve the attitude and development of teacher’s candidate in teaching and learning process with those activities. This will give impact to the teacher’s candidate towards science and technology development in the current global era.

4. CONCLUSION

From the previous result, science lecturers who implemented PISMP science curriculum in IPG do not have different perception towards contexts, input, process and product based on teaching experience in school. Nevertheless, they need to adapt and spread the Science curriculum according to the development of society and environment. The curriculum might be facing some problem simultaneously with the development of society and environment. Thus, lecturer experience must be added through trainings whether local, national or international. On the other hand, based on teaching experience in IPG, Science lecturer who teach Science curriculum for 15 years showed better product element. This indicate that government of Malaysia should consider to implement training and specific short course for the young lecturer and lecturer who have more years of teaching experience in order to increase lesson and learning result. The suggestions are not focused generally towards Malaysian government only, but it should be taken into account by Science lecturer to improve the ongoing personal competency. They should not expect on the training provided by government only, but they can carry out discussion with other lecturer to improve their competency in conducting certain curriculum.

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Perspective of Lecturers in Implementing PISMP Science Curriculum in Malaysia's IPG (Fauziah Hj Yahya)
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[16] Fauziah Hj Yahya, She is Ph.D Candidate at Faculty of Education, Universiti Teknologi Malaysia.
Abdul Rahim Bin Hamdan is Associate Professor at Faculty of Education, Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor, Malaysia. He completed Bachelor of Humanities with Education (Ba.ed. Honours) (Geography), University of Science Malaysia in 1990; Master of Education (Curriculum and Instruction) Universiti Teknologi Malaysia in 1997 and Doctor of Philosophy (Professional and Continuing Education), University of Surrey, United Kingdom in 2005.

Hafsah Binti Jantan, She is Ph.D Candidate at Faculty of Education, Universiti Teknologi Malaysia

Halimatussadiah Binti Saleh, She is Ph.D Candidate at Faculty of Education, Universiti Teknologi Malaysia