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Development and Validation of Assessment Instrument for School Students in Prison in Malaysia

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Abstract

The purpose of this study was to develop and validate an instrument to assess the occurrence of students in schools in prisons in Malaysia. Based on the literature review and sharing sessions with experienced teachers who teach in prison schools, the researcher identified constructs and items that contribute to the measurement of student achievement. Validity and reliability have been done on the constructed items. The content validity of this instrument involved 8 experts in various fields. A total of 432 students were involved in this study. As a result, a newly developed instrument consists of 4 constructs of student development which are attitude, achievement motivation, morals and academic self-efficacy. Exploratory factor analysis was conducted to obtain construct validity using SPSS software. The factor loading of each item is in the range of 0.669 to 0.805 and the reliability value (alpha) is in the range of 0.78 to 0.83. The total number of items built based on the construct is 55 items. The findings of this study clearly show that this instrument has high validity and reliability and can be used to assess the performance of students in schools in prisons in Malaysia.

Keywords: Prison School, Validity, Reliability, Instrument Development, Assessment

Introduction

Prison School

According to data collected by the Department of Social Welfare, the number of juvenile cases involving minors (children and teens) involved in criminal activity is on the rise. Juveniles who are sent to court have a wide range of prior convictions, including those for stealing, people, sex offences, detention ordinance violations, gambling, treasury bylaw violations, traffic violations, weapon possession, and others. Juveniles are those who commit crimes before the age of 21, including children and teens.

Juveniles with behavioral problems will be required to serve their time in prison. Youth offenders can be housed in the correctional facilities run by the Malaysian Prisons Department. The Malaysian Prisons Department is worried about the necessity for prison education because of the relatively young age of prisoners. In response to these needs, the

Malaysian Prisons Department has opened prison-based schools for adolescent and young adult inmates. The Prisons Department of Malaysia has a stated goal of providing an effective rehabilitation programmed, and one way to do this is by the development of schools within prisons. The school was founded in response to a plea by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) for "Education for All" (UNESCO, 2000).

Assessment Instrument for School Students in Prison (IPPSDP)

IPPSDP is an innovation in the construction of a new instrument to measure the outcome of students after serving their sentence at school in prison. An in-depth literature review was conducted and teachers with experience teaching in schools in prisons were involved to contribute their views on the construction of items in the IPPSDP. Since schools in prisons were officially gazette as operating with the help of cadre teachers from the Malaysian Ministry of Education, there has never been a valid and reliable measurement tool to assess the performance of students in prisons. The construction of this instrument provides an important contribution to the Malaysian Prisons Department to see how far the objectives of the implementation of the education system in prison schools can be achieved. The construction of this instrument is carried out according to the Cohen and Swerdlik (2005) Instrument Construction Model by going through the validity and reliability phases that have been set. Determination of the Measurement Model is one of the levels found in the Systematic Procedure for the Implementation of Partial Least Square Structural Equation Modeling (PLS-SEM) by Hair et al (2010) understood by the researcher to explain the development of this instrument.

Literature Review

Every student in school in prison is seen to develop not only from the academic aspect, but changes in terms of attitude, morals, motivation to become a better person are also always emphasized (Darusalam, 2014). This is clearly stated in the objective of establishing schools in prison where these aspects are emphasized so that the students can successfully start a new life when they are free later.

There are studies that have proven that schools that have clear goals or standards and the practice of teachers collecting and reviewing achievement information are among the schools that successfully improve student achievement (Newmann et al., 1997; and Timperly, 2005, Beare et al., 2018, Fitria, 2018). According to Hezzrin et.al (2016) the implementation of rehabilitation programs that are suitable for children is something that needs to be taken seriously. However, the extent to which the evaluation of the program provided by the responsible party or the program organizer is able to benefit the target group should also be paid attention to. Evaluation of the final results of a program is an important thing that needs to be considered when planning and implementing a rehabilitation program. This is to ensure that the objective of the rehabilitation program is achieved without problems (Fijwala et al., 2014). If program evaluation is not done, the effectiveness of a program on the target group is difficult to measure (Royse et al., 2001). According to Ghazali et al (2017), the evaluation of a program is important to see the efficiency, effectiveness and weaknesses of implementation either during the implementation of the program or after five months of its implementation. However, the measurement tools used to evaluate the program also need to comply with good validity and reliability so that the measurements made can provide accurate information to the researcher (Sekaran & Bougie, 2011). Most researchers choose to adapt instruments

from other studies either from within or abroad. This may be due to the complicated and complex construction process of the instrument itself (Effendi, 2015).

Since schools in prisons have been operating, no measurement tool has been legally developed to measure the success of students after completing an education program in prisons. Therefore, the researcher conducted a study to build a valid and reliable instrument to assess whether schools in prisons can change students in terms of attitude, motivation, morals and academic achievement in line with the objectives of the school's establishment. Evaluation of the final results of a program is an important thing that needs to be done when planning and implementing a rehabilitation program. This is to ensure that the objectives of the rehabilitation program can be achieved (Fatimah, 2009). The effectiveness of a program on the target group is difficult to measure if program evaluation is not done, (Royse et al., 2001).

Research Aims

This study aims to test the validity and reliability of the Student Assessment Instrument in Prison Schools in Malaysia that has been developed.

Research Methodology

The design of this study is a psychometric study that uses quantitative methods. The researcher adapted the instrument development procedure as suggested by Cohen & Swerdlik (2005) and used the rational-empirical instrument construction approach suggested by (Murphy and Davidshofer, 2005). According to Cohen and Swerdlik (2005) in order to obtain a comprehensive study that will subsequently produce an instrument with high validity and reliability, a study should use a workflow that involves three main phases, namely the Designing Phase, the Development Phase and the Instrument Validation Phase. A pilot study was conducted on a group that had the same background as the target group in the actual study (Bruns, 2000; Cohen & Swerdlik, 2002; McIntire & Milan, 2007). For this study, the researcher conducted a pilot study on former school students in prison who have been released. The pilot test process is the initial process to determine the validity and reliability of the instrument. Only those items that meet the standards based on item analysis, validity and reliability will be retained. A pilot test was carried out for the purpose of conducting an exploratory factor analysis (EFA).

Population & Sample

According to Nunnally and Bernstein (1994), the minimum number of samples required for testing a newly built instrument is 300 people. Guilford (1954) set the minimum number of respondents for factor analysis to be 200 people. However, Gorsuch (1983) reduced the minimum number of respondents to 100 people. According to Byrne (2010); Hair et al (2010); and Zainudin (2015), a sample size of at least 100 to 150 people is required for pilot purposes. From the recommendations of several scholars, the researcher chose to set a total of 100 samples to conduct a pilot test. The selected respondents consisted of former students from schools in prisons.

Research instrument

In this study, the instrument that was built is in the form of students' self-assessment of the changes they went through while in school in prison covering four constructs namely attitude,

motivation, morals and academics. The items constructed have undergone a content validity process through the evaluation of eight experts to confirm the items used to assess the occurrence of students in school in prison. Re-evaluation and improvements are made to the items after considering all the comments and suggestions submitted by the experts. The researcher has decided to use a 5-point Likert scale response format in this study. The total number of items built is 55 items. Table 1 displays information related to research instruments that cover aspects of constructs, subconstructs and response formats used in the construction of the IPPSDP.

Table 1
Construct and sub construct of IPPSDP

Construct	**Subconstruct**	**Response format**
Attitude (12 item)	1. The development of ideas/thoughts about learning (cognitive) 2. Students' feelings and beliefs about education (affective) 3. Behavior towards learning (behavior)	Likert 5 scale • – Strongly agree • – Strongly disagree
Achievement Motivation (14 item)	1. The need to achieve success 2. Ability to improve performance 3. Confidence in a bright future	Likert 5 scale • – Strongly agree • – Strongly disagree
Morality (18 item)	1. Personal behavior changes, body care, and soul cleansing 2. Be kind to parents and relatives 3. Man's responsibility	Likert 5 scale • – Strongly agree • – Strongly disagree

	to God and faith in religion	
Academic perfomance (11 item)	1. Self-reflection on subject mastery as a whole 2. Self-reflection on skill mastery	Likert 5 scale • – Strongly agree • –Strongly disagree

Findings

Attitude Construct

Based on the exploratory factor analysis for the learning attitude construct, the Kaiser-Meyer-Olkin (KMO) test through orthogonal rotation (varimax) showed a significant value of 0.902. This shows that the data does not have a serious multicollinearity problem, so the items are suitable for factor analysis. While the results of Bartlett's Test of Sphericity show that the value is significant. The results show that the attitude of students in learning in schools in prison explains 51.0% of the total variance with factor loadings ranging from 0.52 to 0.78 and an eigenvalue of 6.12. The results show that the use of 12 items in the attitude construct as in Table 2 is suitable for measuring the occurrence of student attitudes towards learning in school in prison.

Table 2
Factor

Attitude item	Loading factor
Students relate what they learned to solve problems (S4)	0.78
Students like reading more and more (S3)	0.77
Students' memory improves (S9)	0.76
Students feel positive when they are at school (S6)	0.74
Students are confident to study (S5)	0.74
Students try to concentrate in class(S7)	0.73
Students are interested when they hear school words (S2)	0.71
Students are grateful for the opportunity to learn (S12)	0.71
Students are happy when they can understand (S10)	0.69
Students enjoy learning (S1)	0.67
Students' minds are more developed (S8)	0.66
Students often train their minds to strengthen their memory (S11)	0.52

Achievement Motivation Constructs

The achievement motivational construct has 14 items as shown in Table 3 along with the results of extraction and orthogonal rotation (varimax). The overall Kaiser-Meyer-Olkin (KMO) test for the achievement motivation construct is 0.86 and the results of Bartlett's test of Sphericity are significant. These results show that student achievement motivation in school

in prison explains 46.77% of the total variance with factor loadings ranging from 0.57 to 0.82 and an eigenvalue of 6.54. The results show that the 14 items in the achievement motivation construct are considered appropriate to measure the occurrence of student achievement motivation in school in prison.

Table 3
Factor loading

Achivement Motivation item	Factor loading
Students are confident that they can find a job after being free (M13)	0.82
Students prove themselves to be successful (M2)	0.76
Enables students to get a job in their preferred field (M3)	0.76
Encouraging students to gain appreciation from the people around them (M12)	0.73
Students believe that education can change the future (M10)	0.73
Encourage students to work hard (M9)	0.68
Helps set desired goals (M7)	0.68
Encouraging to reduce careless behavior in learning (M8)	0.67
Encouraging to answer questions well (M11)	0.67
Students improve efficiency as workers (M6)	0.64
Students can compete in a healthy way (M14)	0.61
The student realizes that he is a smart money (M5)	0.58
Students eager to succeed in their studies (M4)	0.57
Helping students make choices in the field of employment (M1)	0.57

Morality Construct

The moral construct has 18 items as shown in Table 4 along with the results of extraction and orthogonal rotation (varimax). The overall Kaiser-Meyer-Olkin (KMO) test for the moral construct is 0.84 and the results of Bartlett's test of Sphericity are significant. These results show that the behavior of students at school in prison explains 41.14% of the total variance with factor loadings ranging from 0.43 to 0.76 and an eigenvalue of 7.40. The results show that there are 2 items that have low factor loading values, namely item A1 (encourages me to do good things) and A14 (prevents me from going to bad places). This item has been dropped to get the best structural load. In total, 16 items in the morality construct are considered appropriate to measure the morality of students at school in prison.

Table 4
Factor loading

Morality item	Factor loading
Students become diligent worshipers (A9)	0.76
Students realize that religion is a life guide (A6)	0.76
Students become a person who listens to advice easily (A7)	0.74
Students believe in God (A8)	0.74
Students improve good relationships with families (A17)	0.73
Students are aware of the importance of family members (A16)	0.73
Students obey God (A18)	0.69
Students want to be devoted to family members (A15)	0.69
Students do not want to be involved in crime again (A11)	0.65
Students respect elders (A13)	0.62
Students take care of personal hygiene (A10)	0.61
The student becomes a responsible person for the family (A5)	0.60
The student becomes a person who admits fault (A2)	0.59
Students become a forgiving person (A3)	0.57
Students sincerely worship (A12)	0.56
Students become people who make friends easily (A4)	0.53
Students do not want to go to bad places (A14)	0.45
Students want to do good things (A1)	0.43

Academic Construct

The academic construct has 11 items as shown in Table 5 along with the results of extraction and orthogonal rotation (varimax). The overall Kaiser-Meyer-Olkin (KMO) test for the academic construct is 0.88 and the results of Bartlett's test of Sphericity are significant. These results show that the academics of students in prison schools explain 58.65% of the total variance with factor loadings ranging from 0.67 to 0.85 and an eigenvalue of 6.45. The results show that 11 items in the moral construct are considered appropriate to measure the moral development of students in schools in prison.

Table 5
Factor loading

Academic item	Factor loading
Students are proud of their academic achievements (AK7)	0.85
Academic achievement of students is better than before going to prison (AK8)	0.82
Students are confident to answer the exam (AK6)	0.79
The level of students' writing skills increases (AK4)	0.79
Students have a sense of responsibility to complete assignments (AK9)	0.78
The level of students' counting skills increases (AK5)	0.78
Student problem-solving skills in assignments increase (AK10)	0.75
The quality of student work increases (AK2)	0.73
Students' decision-making skills increase (AK11)	0.73
The level of students' reading skills increases (AK3)	0.67
Students' knowledge increases (AK1))	0.67

Reliability

In order to further strengthen the development of student assessment instruments in schools in prisons in Malaysia, the level of reliability using Cronbach's Alpha coefficient was used after factor analysis was carried out. A pilot study was conducted to obtain the reliability value of the instrument. Cronbach's Alpha value for the entire instrument is 0.88. this shows that the instrument has a good reliability value because the alpha value for all four constructs of the assessment of students' occurrence in prison schools is above 0.7. Table 6 shows all the items in the construct of students' evaluations in schools in prisons showing relatively high item-total correlation values. Reliability values that exceed 0.6 can be accepted and used in the study (Hair et al., 2014). With this, the assessment instrument for students in schools in prisons in Malaysia provided by the researcher is suitable for measurement and proves to have good internal consistency.

Table 6
Reliability values

construct	**Item**	***Corrected Item-Total correlation***	**Alpha**
Attitude	12	.60 .56 .56 .62 .57 .66 .65 .57 .63 .65 .62.61	.78
Achievement Motivation	14	.67 .63 .65 .65 .63 .60 .64 .59 .60 .55 .72 .75 .57 .63 .56	.82
Morality	18	.72 .75 .57 .63 .56 .66 .53 .57 .58 .62 .56 .64 .65 .66 .65 .66 .66 .52 .61	.81
Academic	11	.67 .63 .60 .72 .66 .64 .65 .61 .63 .60 .65	.83
IPPSDP	55	.88	

Discussion

IPPSDP is built on the basis of four main constructs identified based on the objectives of establishing schools in prisons, namely changing learning attitudes, achievement motivation, morals and academic achievement. A total of 55 items have been developed with a breakdown of items according to constructs which are learning attitude (12 items), achievement motivation (14 items), morals (18 items) and academic achievement (11 items).

There are three sub-constructs identified for the construct of change in learning attitude, namely (i) changes in students' cognitive aspects towards learning in schools in prisons, (ii) affective changes in students towards learning in schools in prisons and (iii) changes in students' behavior towards learning in school in prison. As for the construct of achievement motivation, there are three sub-constructs identified, namely (i) the need for students to achieve success in school in prison, (ii) the ability to improve performance and (iii) confidence in a bright future. For moral constructs, three sub-constructs were identified, namely (i) personal moral change, (ii) family moral change and (iii) religious moral change. Academic achivement refers to two sub-constructs of students' academic self-evaluation of (i) overall subject achievement and (ii) student skill achievement.

The instrument construction model used by the researcher is the (Cohen and Swerdlik Model, 2002). Construct validity should be used to validate instruments over other procedures (Nunnally & Bernstein, 1994). This instrument for evaluating students in schools in prisons has high reliability and also good construct validity and can be used to measure the outcome of students after finishing school in schools in prisons. This instrument is easy to administer by

teachers because there are 55 items that use a five-point Likert scale which is appropriate and does not burden teachers to evaluate students (Ludwig et al., 2015). In addition, this student assessment instrument is user-friendly because the sentences and words used are simple and easy to understand. This instrument is also very economical in terms of time and cost efficiency (Walberg et al., 2012). This is because students and teachers often face the problem of time constraints. This instrument can also be used for students in other moral rehabilitation centers because this study focuses on the occurrence of students who have committed criminal offenses.

Conclusion

The construction of the IPPSDP has gone through a phase of validity and reliability assessment so that the items constructed have good psychometric characteristics. The construction of a new instrument requires a high level of research so that each item that is built really measures the set construct. This innovation can be a reference to the Malaysian Prisons Department regarding the quality of the education system in prison schools. Through the assessment of students who follow the education system in prison schools, the top management can make improvements so that the school's objectives can be achieved as much as possible. The teachers will also benefit from the construction of this instrument. The teachers can evaluate whether the learning implemented in the school in the prison helps the students to become better people. The construction of this instrument can also be used as a reference material for other researchers, especially in the field of behavior modification, the development of students and problematic students.

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