

An Integral ASIE ID Model: The 21st Century Instructional Design Model for Teachers

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Abstract Design of instruction is an important feature in teacher education at fulfilling the needs of 4Cs (*critical thinker, communicator, collaborator, creator*) developing “a globally competitive learners”. As Instructional design models (ID) need to move from adopting a standard approach to developing models that have an impact on learners profiles, creating a much better learning experience, skills and knowledge both in classroom and online. Traditional ID models will have to be re-modelled and re-designed to deliver instructions which are more learner-centered than process-centered. An Integral ASIE Instructional Design Model (Analyze, Strategize, Implement and Evaluate) is an online planning ID Model which serves as alternative to the existing traditional ID models which support experiential and collaborative learning for learners in gaining and re-producing information. It is interactive to the user, integrative in planning the content, prescriptive in the planning procedures and constructive in the organization of the components. Instructors/teachers plan their instruction in the planning mechanism known as Multiple Integration Worksheet (MIW) by interacting within and between components in the “Reflection Cycle” of the model and it allows sharing of information among teachers across nations. This unique features provides flexibility in customisation of items and guide instructors/ teachers in formulating & integrating the best possible designing practices giving opportunities for learners to explore their potential establishing a more participative, communicative and innovative learning environment. It is accessible at www.asiemodel.com.

Keywords Instructional design, ASIE ID Model, instructional planning, Multiple Integration Worksheet (MIW)

1. Introduction

Education plays a major role in the social and economic development of the nation. Ismail Md. Zain [4-7] argued that improvement of dynamics teaching and learning process is

much needed. It requires teachers to understand deeply the areas of instructional design as part of their instructional planning, to ensure our education system continues to progress in tandem. The features of the 21st Century Learning needs teachers to be involve in the dynamics learning process which is multi-sensory, collaborative, and kinesthetic learning experience integrated in the learning activities which enable students to achieve the 4Cs requirement (*critical thinker, communicator, collaborator, creator*) developing “a globally competitive personality”. In respond to this development, changes must be made in the instructional planning to cater to the world demand. Children of today are leaders of tomorrow in sustaining the nations’ stability and success. The curriculum and teaching strategies are reviewed and revised in accordance to the needs. More emphasis is on “learner-centered approach” where teachers are facilitators guiding learners in achieving the intended learners’ learning outcomes. Hence, Mishra & Koehler [9] argued that an extensive pedagogical knowledge is also required for them to accommodate and integrate technology, pedagogy and content knowledge (TPACK) effectively in their instructional planning. The 21st Century Education involves not only the learning process but covers the entire system of education engaging teachers, learners, policy makers, stake holders which play an important role in supporting and integrating all elements that foster learning.

Thus, Oblinger & Oblinger [10] suggested that Traditional ID models will have to be re-modelled and re-designed to deliver instructions which are more learner-centered than process-centered. To achieve the dynamics of the teaching and learning process, an Integral ASIE Instructional Design Model is developed to accommodate the above needs and challenges.

2. Theories and Principles of Instructional Design Model

Research attests that instructional design is the youngest discipline in the behavioral sciences. However its impact on learning activities of the military, business organizations, and other non-governmental organizations has been very remarkable.

Table 1. Statistical analysis of teachers' knowledge, application and exposure on instructional design model

ITEMS	FREQUENCIES/PERCENTAGE									
	(1) YES		(2) NO		(3) NOT SURE		(4) TOTAL		(5) (2+3)	
	f	%	f	%	f	%	N	%	f	%
(A) KNOWLEDGE	52	22.3	113	48.5	68	29.2	233	100	181	77.68
(B) APPLICATION	48	20.60	137	58.79	48	20.60	233	100	185	79.39
(C) EXPOSURE	47	20.17	121	51.93	65	27.89	233	100	186	79.82

Table 1 shows the statistical analysis of the teachers' knowledge, application and exposure of instructional design model upon 233 respondents (teachers) in selected region in Malaysia. High percentage of the frequencies on the combined item 2 & 3 (column 5) indicates that the impact of instructional design models in the classrooms of our educational environment has not been notable as expected.

According to Seel [13] an instructional design model describes or shows the main elements of an instructive program, and most often lists a number of variables to be considered in designing instruction and regularly used to develop specific aspects of instruction or teaching. Gustafson & Branch [3] further explained that instructional design is a system of procedures for developing educational and training programs in a consistent and reliable fashion. It is a complex process that is creative, active and iterative. It is the process of systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It involves the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities. It is also a branch of knowledge concerned with research and theory about instructional strategies and the process for developing and implementing those strategies. The University of Michigan [14] stated that instructional design is the science of creating detailed specifications for the development, implementation, evaluation, and maintenance of situations that facilitate the learning of both large and small units of subject matter at all levels of complexity. It is a reality whereby it can start at any point in the design process and is written up as if it occurred in a systematic fashion.

3. Development of Instructional Design Models

Many instructional design models have been developed. Richey & Klein [11] argued that these models tend to pay attention to the unique conditions of various instructional settings as well as alternative orientation to the instructional process itself. The systematic use of instructional design models is not a new phenomenon. According to Saettler [12] there are evidences of systematic use of theories, models and

methods from the earliest times by educators such as Comenius, Pestalozzi, Dewey, Skinner, Brunner, Ausubel, Gagne, Briggs and others. During the Second World War, there was a need to train military personnel quickly and effectively in reaching the objectives. For this purpose, instructional design models were used. The systematic use of instructional design models were found to be effective in reaching the learning objectives. A survey of literature shows that there are many instructional design models. Although the overall objectives of the models are to improve instructions, they differ from one another in terms of number of steps it has, the underpinning theories, the purpose of the usage and other features. In the face of dynamic growth of ID models, instructors or teachers have to be careful to choose the right model for their purposes. There are many types of instructional design models. These models can be categorised theoretically or functionally. Theoretically, the models may belong to the paradigms of behaviorism, cognitivism, and constructivism.

ID models do not necessarily exclusively belong to a particular theoretical paradigm. Some models may have a combination of more than one theoretical paradigm. Gustafson & Branch [3] categorized ID models into three groups as; (i) Classroom-based ID Models, (ii) Product-based ID models, and (iii) System-based ID Models. In developed countries, systematic use of instructional design models has been practiced for quite some time. Andrew & Goodson [1] based on their analysis of 40 instructional design models; support the use of these models in instructional planning. ID models are able to improve instructional process, improve management and development of instructional development by monitoring and controlling the functions of systems approach and improve evaluation processes of the system's components based on the procedures and feedbacks.

4. An Integral ASIE Instructional Design Model – The concept

Based upon the above literature reviews on the theoretical development of ID models, An Integral ASIE Instructional Design Model is formulated and developed (Figure 1). An Integral ASIE ID Model formulated by Ismail Md. Zain & Balakrishnan M. (2014) [4] is an acronym for Analyze, Strategize, Implement and Evaluate. It is an integral

instructional design model developed as alternative solution to the challenges mentioned for schools and institutions of higher learning in the 21st century learning environment.

The model possesses strong fundamentals and underpinning teaching and learning principles. Since it has been developed in the mist of the 21st Century Education; it fulfills the current educational trends and issues, such as flexibility, adaptability and effectiveness capabilities in almost every aspect of instructional environment. Although ASIE Model can be considered as an adaptation of the various ID models particularly, Dick & Carey model (1978, 1997), Dick & Reiser Model (1998), ASSURE Model (1999) and have its root from the generic ADDIE model, but ASIE Model has its own strength by its features. It is purely designed for classroom used (Classroom-based ID Model) unlike those models which are originally designed for instructional system development (ISD) purposes (System-based ID Model) and the development of courseware (Product-based ID model) that was later modified to be used by teachers in the regular classroom.

ASIE Model integrates design and development component into Strategize consisting of integrating, accommodating, applying and instilling. Strategize has different connotation from Design and Develop although it sounds alike. The later dealt with teachers' efforts in designing and delivering the best possible practices in the learning environment. ASIE Model works directly on learners' needs and current education requirements. Teachers need to reflect through "reflection cycle" of the model to determine learners' needs in achieving the learning outcomes. It is a direct kind of learner-centered learning approach.

However, ASIE Model differs from the usual ID model because it construct MIW (Multiple Integration Worksheet),

a template that may be used by teachers or instructional designers to prepare immediate (micro level) or weekly lesson plan (macro level) based upon input of four components in the model. Another important and interesting feature is the structure of the model (aspects and items in the components) creates teachers' awareness in accommodating the 21st Century learning skills in their planning such as learning and innovation skills, life and career skills, and technology skills. It promotes the application of various thinking tools through different instructional methods and techniques and instilling moral values as required in the curriculum and formulate instructional questions for overall lesson planning.

ASIE Model takes the challenge on the efforts and initiatives of Partnership For 21st Century Learning (P21) [2] to visualize their formulation of learning framework into classroom practices by providing mechanism for teachers to design the instructions. It is the transformation in education which needs teachers to react positively and patiently in applying ASIE model into their instructional planning.

Table 2 shows the summary of the main characteristics of the situational ASIE ID Model which may differ or value added to other conventional ID models in comparison.

4.1. Features of an Integral ASIE ID Model

An Integral ASIE ID Model comprises of four main basic components serve as a role in coordinating procedural flow of the model. Each component provides several suggested aspects and items listed. Aspects are important planning features that has been determined and categorised to guide teachers in their instructional planning whilst items are planning elements which could be customised accordingly by teachers across nations in fulfilling the educational needs globally or following their own normal practices (Figure 2).

Table 2. Characteristics of ASIE ID Model in comparison to other models

CONVENTIONAL ID MODELS	SITUATIONAL ASIE ID MODEL
<ul style="list-style-type: none"> Most of the models originally designed for Instructional System Development (ISD) (http://www.nwlink.com/~donclark/history_isd/addie.html) More concern on teachers' delivering process in designing instruction – teacher-centered. Answering the question "What the teachers should give/deliver?" – (delivering - teachers' preparation) Provide instructional design process 	<ul style="list-style-type: none"> It is purely designed for classroom used More concern on learners' aspirations, emphasizing on the learning strategies, fulfill students' learning requirements (learner-centered) in designing instruction. Answering the question "What the learners should get/receive/react/responds?" (collaborating and communicating – learners' engagement/ interactions) Provide practical design procedures
<ul style="list-style-type: none"> Learners' assessment in the form of formative and summative evaluation, treated as a separate component in most of the conventional ID model. 	<ul style="list-style-type: none"> Instructional question is an item formulated in the 2nd component of the model which is integrated in the activities based on LOTS and HOTS engaging the learners "to think while doing" in the learning environment.
<ul style="list-style-type: none"> Structured /stereotype/rigid designing items 	<ul style="list-style-type: none"> Flexible designing items – allows customization with regards to the current situation (able to add and remove items in online version)
<ul style="list-style-type: none"> Application towards system development, courseware development, selection of teaching materials and the development of teaching methods. 	<ul style="list-style-type: none"> Application specifically towards accommodating, integrating, applying (strategising) current educational needs, preparing learners to the 21st Century learning environment. Developing/engaging/exploring students' potentials (the development of 4Cs)
<ul style="list-style-type: none"> Planning is done conventionally – manually designed 	<ul style="list-style-type: none"> Online planning – the model's features provide opportunities, enabling instructors/teachers share ideas in their planning across nations

The Model has a planning mechanism known as Multiple Integration Worksheet (MIW). Unlike the rest of the models, this unique features guide instructors and teachers in the process of formulating & integrating multiple elements for the best possible practices in the instructional design and planning strategies. The model is interactive, integrative, prescriptive and constructive. It is interactive to the user, integrative in planning the content, prescriptive in the planning procedures and constructive in the organization of the components.

The Model (Figure 1 & Table 3) begins with the instructors or teachers analysing suggested aspects and items in the first component of the model including the instructional profile such as subject, theme, learning areas, topic, learning objectives and outcomes or other items of the profile for the particular subject. The learners' profiles or attributes of the learners (example: multiple intelligences & the learning styles, and other relevant profiles) are also Analyzed and identified for the purpose of an appropriate selection of instructional media/materials according to its profile engaging learners in the classroom activities. In the second component of the model, features of the 21st century learning skills Analyzed, various instructional tools

(techniques, methods, and activities) selected, appropriate thinking tools especially dealing with the principle of higher order thinking skills (HOTS) and aspect of moral values identified. This leads to the formation of instructional questions. They are essential questions for the topic which formed instructional strategies in the instructional planning mechanism (MIW) mentioned above. MIW served as integral guidelines for instructors or teachers to develop their several daily lesson plans for a topic/unit selected.

The third component of the model is the implementation stage. At this stage instructors' or teachers' daily course or lesson plan is developed and adapted based upon MIW. Improvising may take place to ensure its appropriateness and effectiveness on the learners in the learning & teaching environment.

The final component is the evaluation stage whereby responses from feedback are gathered to review and revised the instructional planning strategies in the respective component and aspect of the model. It is a reflection process for future instructional redesigning opportunities. However, evaluation is not only taking place at the end of the planning but at every component of the model as indicated in dotted lines where ever applicable.

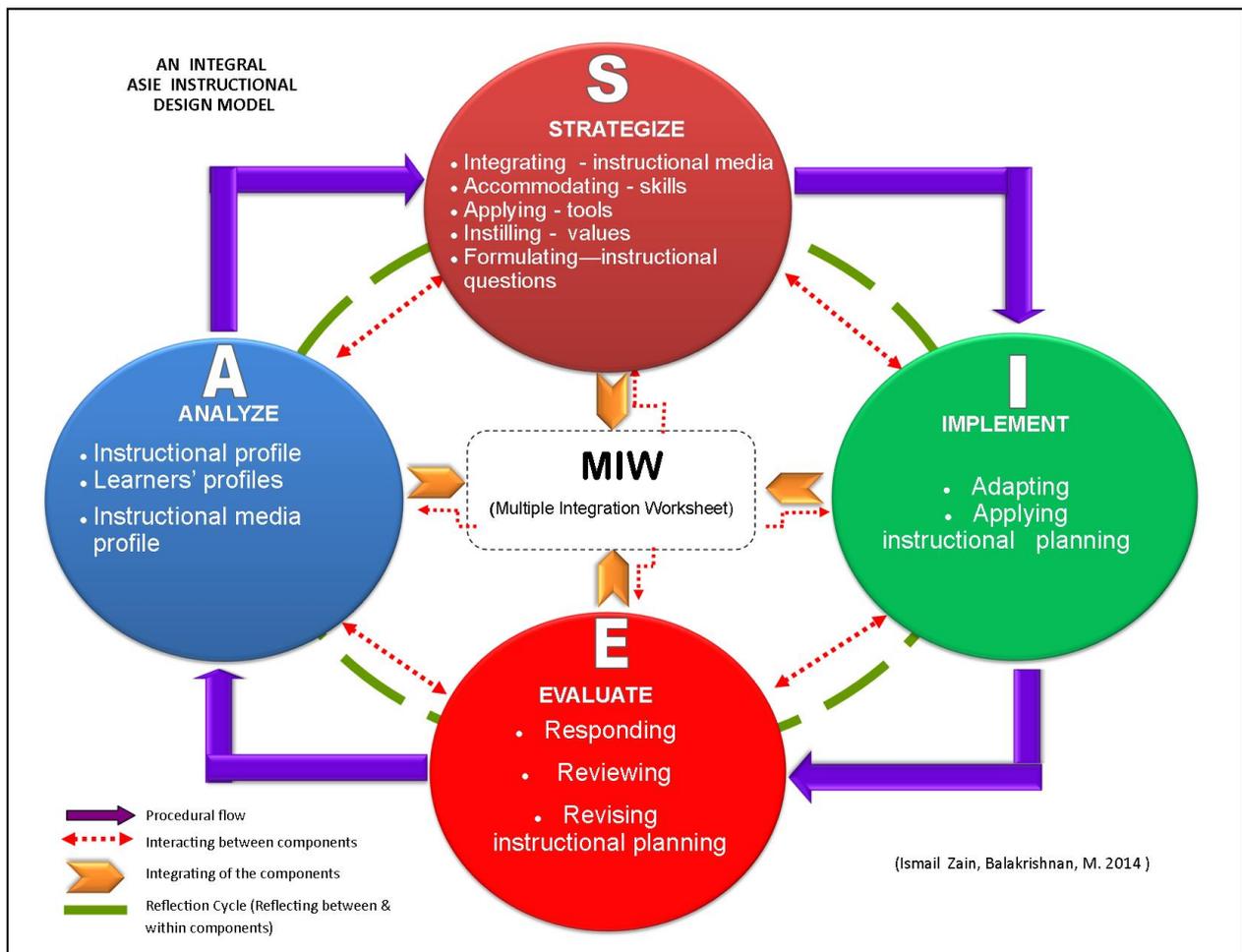


Figure 1. The main structure of An Integral ASIE Instructional Design Model

4.2. Multiple Integration Worksheet (MIW)

Multiple Integration Worksheet (MIW) is a mechanism for the integration process in formulating instructional strategies. In the online planning MIW serve as a displayed template receiving and organising information accordingly from various aspects and items of the main components constructed to form teachers’ instructional planning. It is automatically saved in the system as a record name and it is retrievable and printable whenever needed. It is also accessible for others to share the work across nations by activating the searching features in the model. Instructors or teachers may key in the information in the main components whilst it will be displayed in MIW. Editing will be done from the components displayed in MIW. It may be kept in the digital form or produce in a hard copy.

Table 4 shows MIW comprises elements of the first and second component in ASIE ID Model online version. The third and fourth component will not be displayed in MIW since those components are the procedural flow for instructors or teachers to put their instructional planning into classroom practices and also for evaluation purposes. However, being an interactive and constructive model, it guides users to amend their work for redesigning purposes by activating MIW into editing mode when users click on any aspect of the 2 components.

Lines and arrows indicate the interrelations between and within the components of the model to provide information in the MIW. Lines and arrows give ways for multiple interactions in considering, identifying and selecting the best possible practices engaging learners in the learning activities as indicated in the student-centered learning principles.

Table 3. Components of An Integral ASIE Instructional Design Model

COMPONENTS		ASPECTS	ITEMS	MIW
A	ANALYZE	instructional profile	subject, theme, learning areas, topic, etc. learning outcomes/ learning objectives etc.	Multiple Integration Worksheet (MIW) is an overall planning mechanism based upon aspects and items of the components in the model. Used to guide instructors / teachers in formulating & integrating the best possible practices in the instructional planning strategies to meet the 21 st century learning needs and requirements for learners
		learners’ profiles	multiple intelligences, learning styles in relation to their age group/clusters, and other profiles	
		instructional media profile	types of media chosen elements compositions	
S	STRATEGIZE	integrating - instructional media	ways in which instructional media integrated in the instruction in relation to the learners’ profiles and instructional profile	
		accommodating - skills	identifying the 21 st . century learning skills and features	
		applying - tools	applying various thinking tools - Higher Order Thinking Skills (HOTS) applying instructional tools - technique, methods, activities, etc.	
		instilling – values	element of moral values & others	
I	IMPLEMENT	formulating	instructional questions – essential questions for lesson development	
		adapting	adapting for lesson/course development	
E	EVALUATE	applying	applying in the learning & teaching process based upon lesson/course plan developed	
		responding	responding to the feedback	
		revising	revising the instructional planning strategies for future redesigning	

Table 4. Multiple Integration Worksheet (MIW)

MULTIPLE INTEGRATION WORKSHEET (MIW)

ANALYZE			STRATEGIZE				
Instructional profiles	Learners' profile	Instructional media profile	Integrating	Accommodating	Applying	Instilling	Formulating
<p><i>Class</i> : Year 6 <i>Subject</i>: Science <i>Theme</i>: Investigating Living Things <i>Learning area</i>: Interaction among living things <i>Learning objective (s)</i>: Knowing the impact of human act on the environment. <i>Learning outcome (s)</i>: By the end of lesson the student will be able to: -</p> <ul style="list-style-type: none"> List examples of environmental destruction caused by humans (lesson 1). Write report on how human act contribute to the environmental destruction (lesson 2). Predict what will happen to the earth if there is no control on human act (lesson 3). 	<ul style="list-style-type: none"> <i>Learning styles</i> <ul style="list-style-type: none"> * Visual * Kinesthetic <i>Multiple intelligences</i> <ul style="list-style-type: none"> * naturalist * Spatial * Intelligences * kinesthetic 	<ul style="list-style-type: none"> <i>Types of media</i>: <ul style="list-style-type: none"> * video clip, * still picture * browsing internet <i>Elements</i>: <ul style="list-style-type: none"> * graphic & * video <i>Composition</i>: <ul style="list-style-type: none"> * Object – rivers/trees/ animals * Background: mountain ranges * Emotion: feeling towards surrounding 	<ul style="list-style-type: none"> <i>Instructional media</i>: Intergrating procedures <ul style="list-style-type: none"> * students watching video, * observe/ analyse the composition of still picture/ video clip * interaction session (discussion) * searching materials / browsing internet 	<ul style="list-style-type: none"> <i>21st Century learning skills</i>: <ul style="list-style-type: none"> * global awareness * critical thinking and problem solving * communication and collaboration <i>Thinking skills</i>: Higher Order Thinking Skills (HOTS) <ul style="list-style-type: none"> * cause & effect (CAF), & Plus, Minus, * interesting (PMI) - from de Bono's work) * creating (Bloom's taxonomy) * prediction (science process skill) 	<ul style="list-style-type: none"> <i>Thinking tools</i>: <ul style="list-style-type: none"> * graphic organizer based upon HOTS * principles, CAF, PMI. <i>Methods/ techniques/ activities</i> <ul style="list-style-type: none"> * cooperative learning * experiential learning * collaborative learning * constructive learning <i>Activities</i> <ul style="list-style-type: none"> * watching & exploring from video clip * analyzing still picture * interaction & responding from Q&A. * group discussion * write report * role play (dramatization) 	<ul style="list-style-type: none"> <i>Values</i> <ul style="list-style-type: none"> * environmental preservatory/ caring/ appreciation of natural environment 	<ul style="list-style-type: none"> <i>Instructional questions</i> Activities based on LOTS <i>Verbal interaction (remembering, understanding, applying)</i> <ul style="list-style-type: none"> * Things that can be seen in the video clip. * Relate the thing that can see in the video clip to the thing that is hidden. Explain and gives evidences. Use graphic organizer. * What do you feel if you are at the place? Why do you say so? Activities based on HOTS (analyzing, evaluating, creating) Group discussion <ul style="list-style-type: none"> * Why do people like to explore forest? Search internet. * If you are with them what type of activities that you are expected to do? Why do you say so? Why is it so important doing those activities? Give logical reasons to support your answers. Refer materials. * In your opinion, what will be expected to happen to the environment in future if those activities continues. Give reasons for your answers. * Perform a sketch to demonstrate situation from the answers given in the discussion. * Create characters & dialogue. * Give a title to your sketch.

5. Finding & Discussion

Workshops have been conducted for instructors and teachers to develop in-depth the understanding of this model. In addition, questionnaires were administered to gauge its effectiveness. A five-level Likert Scale was also constructed to ascertain teachers' views on the effectiveness of the model. The indication of the effectiveness is represented by the percentage of respondents' frequencies marked in each item. 105 participants responded to this questionnaire. Table 5 shows the respondents' views on the workshop conducted to look at the effectiveness of the model in relation to their preparation of lessons. The results of the analysis are in the form of frequencies and percentages of total respondents towards all the 5 items listed.

The development of An Integral ASIE ID Model gives an impact on the instructional planning. It is an integral model because the entire items of the components integrate in MIW to form a complete intended teaching and learning profiles at

macro and micro levels.

Every component of the model is interactive providing simple planning steps to ensure instructors and teachers achieve the complete and effective design of instruction for their learners. Instructors or teachers are able to integrate all the features and requirements of the 21st learning skills as well as guiding them to choose and integrate ICT/instructional media appropriately, instilling and sustaining moral values in their instructional planning. It is self-prescriptive to ensure instructors have a deeper understanding towards every component of the model and its role in the current learning and teaching concepts and features.

The entire components of the model developed constructively based upon sound theories and principles of Instructional design. The model will keep instructors/teachers aware of all the important items and features to be integrated in the instructional planning in the current educational environment.

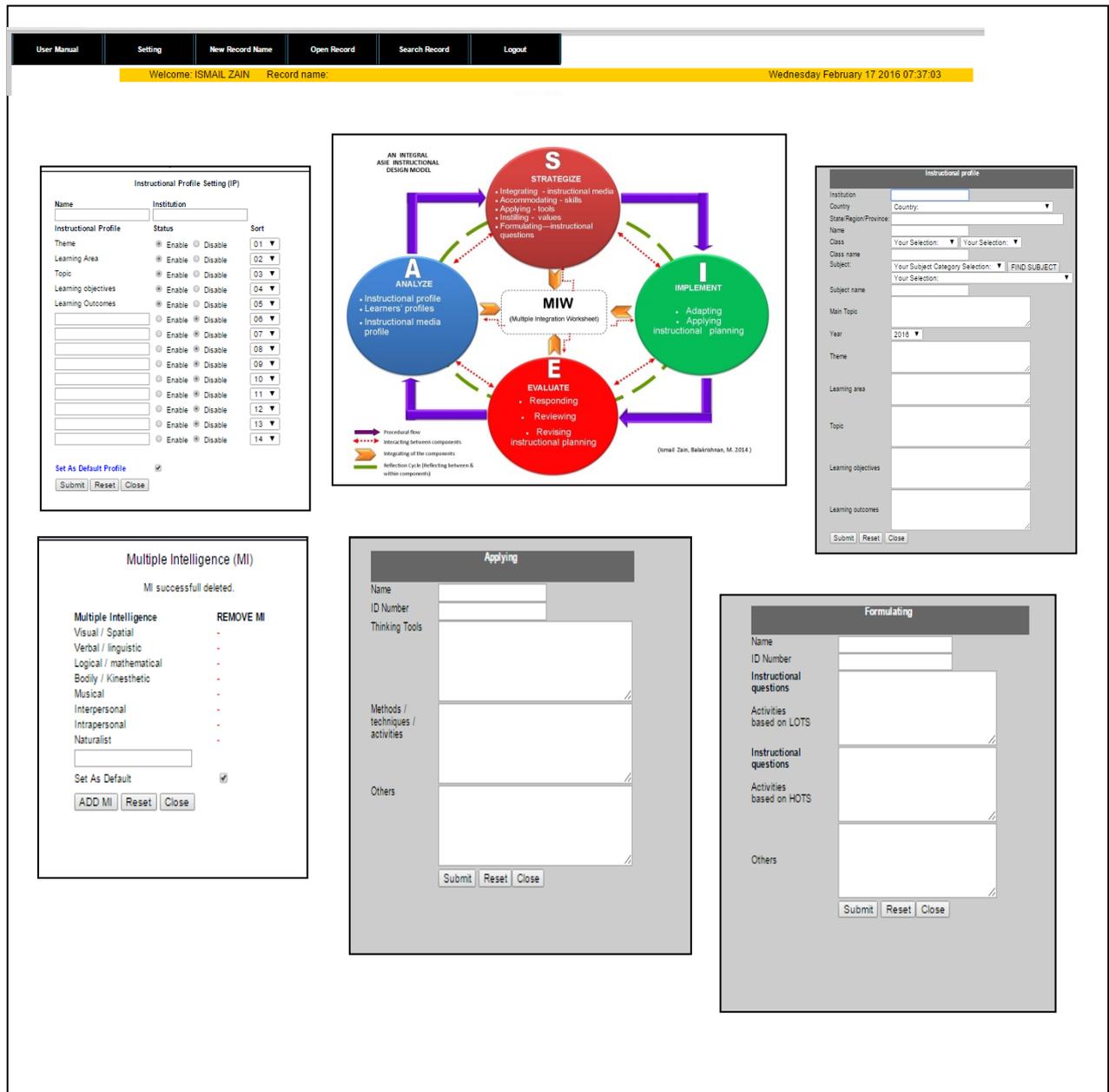


Figure 2. Customisation of items in an online ASIE ID Model

Table 5. Analysis of the effectiveness of An Integral ASIE ID Model

Items	Frequencies/percentage											
	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Total	
	f	%	f	%	f	%	f	%	f	%	N	%
Clarity	62	59.00	41	39.00	2	1.90	0	0.00	0	0.00	105	100
Relevance to 21 st century learning needs	71	67.62	33	31.43	1	0.95	0	0.00	0	0.00	105	100
Useful for instructional planning	76	72.38	29	27.62	0	0.00	0	0.00	0	0.00	105	100
Improvement/ value added of knowledge & skills among teachers	70	66.67	32	30.48	2	1.90	0	0.00	1	1.95	105	100
Support/ meets the Education Blueprint requirements	66	62.86	35	33.33	3	2.86	0	0.00	1	1.95	105	100

6. Conclusions

By looking at Table 5, the scores clearly show that all items are above 50% on the strongly agree column (Clarity – 59%, Relevance - 67.62%, Usefulness – 72.38%, Improvement/ value added of knowledge & skills – 66.67%, and Support/ meets the Education Blueprint requirements – 62.86%).

On this premise, this study indicates that An Integral ASIE Instructional Design Model is much needed by instructors and teachers for designing their lessons. Malaysia as well as other countries is moving to enhance the knowledge and skills of the teachers. Aim at improving the dynamics of the teaching and learning process as indicated in the Malaysia Education Blueprint 2013-2025, [8] this process will equip students holistically and allow them to succeed in the 21st century with all the opportunities and challenges existed.

In the current situation, the application of ICT in the classroom is not a major problem but those knowledge and skills are not sufficient to be an effective teacher. Teachers, as well as other educators, must have the knowledge and skills needed to integrate ICT effectively into the learning environment. If not, students will not be exposed to the wealth of information resources available and will be deprived from learning to use ICT effectively themselves. The Model is the solution to the above issues in the field of designing instructions.

The online model version 2.0 is accessible at www.asiemodel.com. The updating of its features will continue to progress providing latest development of educational needs and improving the operational and technical aspect of the model.

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