The Collaborative Instructional Design System (CIDS): An Innovative Instructional Design Tool for the 21st Century Learning

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The Collaborative Instructional Design System (CIDS) is an innovative tool in instructional design that will benefit teachers as well as stakeholders for both schools and higher institutions.

The Collaborative Instructional Design System deals on the important aspect of the 21st-century instructional design with wider perspectives involving various communities in education, sharing and collaborating ideas and strategies, promotes creativity while establishing "globally competitive learners" towards the era of IR4.0 for a better future living in a new emergence of smart Society 5.0.

Abstract

The transformation of the education ecosystem is critically required particularly in the era of the information technology. The main aim is to enhance the quality of educational practices whilst creating an inspiring learning environment for learners, giving them an opportunity to determine their own learning activities as far as learner-centered approach is in practice. Much effort has been spent in providing e-learning applications to the learners, tools, and strategies for teachers. However, not much effort has been done in connecting the dots - integrating elements and requirements of the current educational needs, fulfilling the nation’s educational policies and aspirations into a mechanism that helps teachers to have a wider perspective in the process of designing the instructions creatively, systematically, practically and professionally.

The Collaborative Instructional Design System (CIDS) is an innovative tool in instructional design that will benefit teachers as well as stakeholders for both schools and higher institutions. It was developed as an option for educationalist in fulfilling the current educational needs especially the 21st Century education with its 4Cs learning needs (critical thinker, communicator, collaborator, creator), and learning opportunities developing “globally competitive learners”, regardless of their abilities. It is a new dimension at engaging teachers and other professional learning communities to be collaboratively involved in the 21st-century learning, facilitating and preparing learners to the Fourth Industrial Revolution – IR4.0, while facing the challenges of the newly emerging smart Society 5.0.

CIDS comprises The Integral ASIE Instructional Design Model (Ismail Md. Zain, Balakrishnan M. 2014, 2016). Its IHE features (integrative, hybrid, eclectic) has the capacity to collaborate with many elements related to education in producing a highly-rich, effective and creative instructional planning activities. Aspects of the model are based on the proposed 21st-Century Learning Framework (21st Century Partnership, 2002) and Four-Dimensional Education (Fadel C, Bialik. M., Trilling B. (2015). It has fundamentally encompassed the philosophical attributes of metaphysics, epistemology, axiology, ethics, and logic. These philosophical underpinnings strengthen the need for professional education player primarily classroom teachers to execute this model in their daily teaching and learning endeavors. It is classroom-based ID model that follow the theories of behaviorism, cognitivism, constructivism (Jonassen, 1991) and connectivism (Siemens, 2005; Ireland, 2007) and advanced features of the Professional Learning Community - - PLC, (Richard D.F. (2004). It enhances teachers’ professionalism while enriching learners’ experiences connecting virtually with other communities. It is accessible at https://asiemodel.net

Introduction to the collaborative instructional design system - Connecting the Dots

The Collaborative Instructional Design System (CIDS) is a system that gives teachers an option at designing the current teaching and learning environment in connecting the dots - integrating elements and
requirements of the current educational needs, addressing the IR4.0 and Society 5.0 issues and fulfilling the nation’s educational policies and aspirations into a mechanism that helps teachers to have a wider perspective in the process of designing the instructions creatively, systematically, practically and professionally. It comprises The Integral ASIE Instructional Design Model (Exhibit 1), a transformation of instructional design model (http://edtechreview.in/trends-insights/insights/1058-instructional-design-models-in-the-21st-century-a-review), that provides a simple and practical planning tool fulfilling the features of current and future education needs. It allows teachers strategize approaches, methods, and activities for learners to determine their own choices that will inspire them at engaging with learning activities creatively, joyfully while preserving the characteristics of teachers’ professionalism in learning and facilitating procedures. It is a constructive process in designing the instructions, which provides practitioners in education a valuable tool and perspective in enhancing the quality of instructions for all learners regardless of their capabilities as well in fulfilling the 21st-century learning requirements.

This model provides the procedural flow of the instructional planning which is flexible, constructive and user-friendly. It provides an option for practitioners in the educational field as a valuable tool or mechanism in planning the lesson creatively, following the needs of learners based on their characteristics or attributes. Learners are also given an equal opportunity to determine a variety of methods, activities, and recommendations proposed to be experienced in an enjoyable and exciting learning and facilitating environments. This model has a broad perspective towards improving the quality of learning, facilitating and training activities. It provides opportunities for teachers to discuss and share materials, experiences and their creativity with other colleagues throughout the country towards creating a high-tech learning approach fulfilling the requirements of the current and future education landscape. While special advanced features of the Professional Learning Community (PLC) (Exhibit 2) with its wider scope and concepts are integrated into CIDS giving more opportunities for teachers, learners, and communities to be connected and share valuable information on various aspects of education especially related to the employability issues. Individuals are invited or voluntarily participate in the program by registering as a member of PLC. They can choose to become members of a particular community group - educators, administrators, teachers, professional, student, and private communities. Users may communicate virtually with PLC members for advice, contributions, and sharing of ideas in meeting the needs of learning skills.

**Exhibit 1:** The Integral ASIE Instructional Design Model
Theoretical and conceptual framework of the collaborative instructional design system

The Integral ASIE ID Model has fundamentally encompassed the philosophical attributes of metaphysics, epistemology, axiology, ethics, and logic. This can be seen in flexible planning items that rely heavily on the creativity of teachers and students. These philosophical underpinnings strengthen the need for professional education player primarily classroom teachers to execute this model in their daily teaching and learning endeavors. It can be seen from various perspectives, concepts, and theories in the following descriptions. Theoretically, by looking at various perspectives, CIDS, as its name applied, has the capacity to collaborate with many elements in the instructional planning. The Integral ASIE Instructional Design Model encompassed in CIDS has the features of IHE (integrative, hybrid, eclectic). The items contained in this model are integral in nature because they are integrated with the various basic elements of education, which include the science of technology, pedagogy, and content knowledge - TPACK (Mishra, P., & Koehler, MJ (2006) comprehensively to meet the current learning needs. Looking at the features on the components and items of the model, it can also be classified into the hybrid instructional design system category though basically it is a classroom-based ID model but it has a wider scope which goes far beyond the four walls involving the virtual environments learning which give rooms to the blended type of learning as well as to make the possibility of flipped classroom being practiced. It follows an eclectic approach to the instructional design whereby a designer (user) blends ideas from multiple learning theories to construct a learning experience that works better than from only one theoretical influence. Hence, the paradigms of behaviorism, cognitivism, constructivism, and connectivism are likely being considered and applied in the various instructional planning procedures, unlike some of the conventional models that initially designed for Instructional System Development (ISD) (Seel, N. M. 1997, Gustafson K.L., Branch R.M. 2002) which make this model differs from other conventional ID models.

Theories of behaviorism, cognitivism, constructivism are the three broad learning theories most often utilized in the creation of instructional environments. These theories, however, were developed in a time when technology did not impact learning. New technology forces the 21st-century learner to process and apply information in a very different way and at a very different pace from any other time in history thus, lead to the emergence of connectivism. According to Siemens, (2005) connectivism was driven by the understanding that decisions were based on rapidly altering foundations. New information is continually acquired, and the ability to draw distinctions between important and unimportant information is vital. As a result of the above theories, various learning and teaching models were developed which introduce different methods and techniques to be applied by
teachers and students in learning situations. These methods and techniques that can be integrated into teacher's planning procedures according to their own creativity in the Integral ASIE ID Model. While adapting to the basic principles of instructional design and other instructional design models such as Dick & Reiser Model, Dick & Carey Model, ASSURE Model, ARCS Model, ADDIE Model, attention was also given to other related fields in the formation of this ID model. Basically, what distinguishes between The Integral ASIE ID Model with conventional ID models is in terms of the goal towards meeting the concept of the learner-centered approach. Most other models carry the question "What elements need to be determined by the teacher to build a learning situation for learners" - is more teacher-centered because teachers determine the planning process. While for The Integral ASIE ID Model focus "How teachers strategize the learning in developing a flexible learning situation to meet to the needs of the learners" - it is more learner-centered learning because teachers only suggest various elements that are appropriate while learners are given the opportunity to implement those activities that inspire their interest in establishing “fun-learning” environment.

A special attention has been given to learners' profiles, their readiness in following the lesson, media attributes, and learners thinking levels in establishing the “differentiated learning” situation. Moreover, the relevance between the principles and theories taught in the classroom with the working environment to be met in the era of the Revolutionary Industry 4.0 (IR4.0) and their position and role in the emergence of the smart society 5.0 (Society 5.0) in the future, is a vital factor to be analyzed, strategized and implemented. These factors are important in creating the concept of “thinking out of the box” among learners and educationalist as well, in addressing to the current education developments. Likewise, the key elements in the current learning framework such as the 21st Century Learning Framework, (2002), Four-Dimensional Learning, (2015) and Framework for 21st Century Learning, Ministry of Education, Malaysia (2017), that have a close correlation between each other are also part of the planning items in this model to ensure its relevant to current learning situations. Practically based on the theoretical description, teachers require skill in pedagogical knowledge, technological knowledge, and content knowledge – TPACK (Mishra, P., & Koehler, MJ 2006) integrated into their learning and facilitating activities. A Strategic Learning Structure Framework (Ismail Md Zain, 2016), (Exhibit 3) was developed to clarify how the components of instructional planning in The Integral ASIE ID Model were formed and displayed in a Multiple Integration Worksheet (MIW) based on the areas in the TPACK Model (Exhibit 4).

Exhibit 3: A Strategic Learning Structure Framework
The 21st-century education

So much attention has been given on the characteristics and features of the 21st Century Learning framework in the development of the Integral ASIE ID Model (Exhibit 5) because it is kind of current requirements in learning that support the era of IR4.0 as well as the emergence of the smart Society 5.0. While in 2015, The Four-Dimensional Education (Fadel C., Bialik. M., Trilling B. (2015) has been released which focused on the transformation of education systems in relation to the competencies and aspirations needed by our learners in the 21st-century learning environment. Being closely related to the 21st Century Partnership framework, the component has been restructured to portray the qualities of human learning dimensions namely the knowledge, skills, and character that involved the metacognition processes.

Exhibit 4: Components of TPACK Model in The Multiple Integration Worksheet

The Integral ASIE Instructional Design Model – the procedural application

The Integral ASIE Instructional Design Model is an integrated strategical approach to the designing of the instruction in fulfilling the learners’ needs in today’s learning environment. ASIE refers to the components of Analyze, Strategize, Implement, and Evaluate (Exhibit 1). Each component has several aspects and items accordingly (Exhibit 6). This “learner-centered approach” interactive online ID model in designing instruction, engaged learners of different abilities exploring and unleashing their potentials in generating and creating ideas through Higher Order Thinking Skills (HOTS) activities, (Ismail Md Zain, 2013). The model is interactive - a user-friendly interactive features which provide options to interact with the content of the items, integrative in planning the content - provide options for teachers to integrate planning items provided or add new items as needed in the planning process, prescriptive - provide a fast accessing of preset information that assists users in understanding the features of the model, and constructive in the organization of the components - a complete, comprehensive and well organized strategical planning procedures. The model begins with the individual teacher or a group of teachers in the same subject area collaboratively analyzed the suggested aspects in the first component of the model that include the instructional profiles such as subject, theme, learning areas, topic, learning objectives and outcomes or other profiles for the particular subject. 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 (Ismail Md. Zain, M. Balakrishnan, 2014), 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. Teachers will select the strategies prepared in the third component for their best practices in the classroom to ensure its appropriateness and effectiveness for the learners. The final component is the evaluation stage whereby responses from feedback are gathered to review and revise 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 by dotted lines. The Reflection Cycle is another form of evaluation/reflection for teachers in their instructional planning process as indicated by the green circle. There are other advanced features that benefit teachers in their instructional planning as well as instructional leaders (principle, headmasters, evaluators) in monitoring, supervising, evaluating and accessing the teachers’ professional competencies. There are options allowing teachers to create daily lesson plans (DLPs) according to their respective needs creatively and professionally and creating a Professional Learning Community (PLC) to build character and unleash learners’ creativity.

Exhibit 5: The relationship of the 21st-century learning features integrated into the components of The Integral ASIE ID Model

Multiple Integration Worksheet (MIW)

An Integral ASIE ID Model has its own displayed planning worksheet known as Multiple Integration Worksheet (MIW) (Exhibit 4 & Exhibit 7). It gathers a wide instructional planning information by users through the customized aspects and items in the components of the model. These unique features guide teachers in the process of formulating & integrating the best possible practices for learners with different abilities in the instructional planning strategies at the macro level (overall planning for a specific topic) and at micro levels (creation of daily lesson plan – DLP). Since teachers are encouraged to plan their instruction collaboratively with their colleges, thus, MIW helps teachers in the lesson study session (features of Professional Learning Community – PLC) to determine the best
possible item that fit well in their classroom practices. It is editable and savable in the pdf file format to the user while providing options in requesting it to be shareable among others across the nation. Information selected or written in the 1st & 2nd component of the model *(Analyze & Strategize)* is compiled or inserted in the MIW. It will be displayed when the user clicks on any aspects of the 3rd and 4th component of the model *(Implement & Evaluate)*.

**Exhibit 6: Components, Aspects, and Items of The Integral ASIE ID Model**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>ASPECT</th>
<th>ITEM</th>
<th>MIW</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ANALYZE</td>
<td>Instructional profile</td>
<td>o subject, theme, learning areas, topic, etc. o learning outcomes/ learning objectives etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>learners’ profiles</td>
<td>o multiple intelligences, o learning styles o other psychological profiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>instructional media profile</td>
<td>o types of media chosen o elements o compositions</td>
</tr>
<tr>
<td>S</td>
<td>STRATEGIZE</td>
<td>integrating - instructional media</td>
<td>o instructional media were chosen for the lesson in relation to the above profiles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>accommodating - skills</td>
<td>o Various learning skills including the 21st. Century learning skills and features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>applying - tools</td>
<td>o applying various thinking tools - Higher Order Thinking Skills (HOTS) o instructional tools - technique, methods, activities, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>instilling – values</td>
<td>o the element of moral values &amp; others</td>
</tr>
<tr>
<td>I</td>
<td>IMPLEMENT</td>
<td>formulating</td>
<td>o instructional questions o assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>adapting</td>
<td>o adapting for lesson/course development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>applying</td>
<td>o applying in the learning &amp; teaching process based upon lesson/course plan developed</td>
</tr>
<tr>
<td>E</td>
<td>EVALUATE</td>
<td>responding</td>
<td>o responding to the feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reviewing</td>
<td>o reviewing the instructional planning strategies for improvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>revising</td>
<td>o revising the instructional planning strategies for future redesigning</td>
</tr>
</tbody>
</table>
Exhibit 7: Multiple Integration Worksheet (MIW)

Teachers may select information in each column to create a daily lesson plan (DLP)

Blue text is editable

**Daily Lesson Plan (DLP) – Planning at Micro Level**

The content of DLP is in 2 parts following the model’s component (Exhibit 8). The first part is the information of the selected items from the MIW - 1st & 2nd component of the model (*Analyze & Strategize*). The second part is the information of the teaching and learning activities (facilitating activities, learners’ engagement activities) as indicated in the 3rd component of the model (*Implement*) as well as impact, reflection, and remark as indicated in the 4th component of the model (*Evaluate*).

**Summary - The Impact of CIDS on teachers, learners and administrators - Strength and Capabilities**

Generally, it is time effective, reduce teachers’ burden in preparing the lesson, provide sharing of ideas, establishing unlearn, learned and relearn society - to learn different approaches in educational designing, relearn of new
Exhibit 8: Daily Lesson Plan (DLP)

Strategies formulated in response to the changes in the educational landscape, and unlearn the past experiences through the transformation process in creating awareness of the importance and impact of current innovation in ID towards strategies formulated in response to the changes in the educational landscape, and unlearn the past experiences through the transformation process in creating awareness of the importance and impact of current innovation in ID towards...
lifelong learning as required by The Sustainable Development Goal 4 – Education 2030 Agenda – UNESCO, (UNESCO, 2014). Learners have equal opportunities for gaining knowledge & skills regardless of their differences in capabilities resulting from the high-quality systematic design of teachers’ instructions. Unleash their potentials through learners centered approached, established globally competitive learners – following the 21-century learning needs, Inspiring learners – learning are not just gaining knowledge and skills but responding to the industrial needs for future employability. School administrators are accessible for verification, monitoring, evaluating and identifying teachers’ competences (strength and weaknesses), assist in identifying the relevant CPD courses for teachers while establishing a complete network and database of teachers’ instructional planning.

References


