

**Online Course Template**

Use this document to develop and design your online course, based on the “backward design” model of Wiggins and McTighe.

In Week 2, you are expected to submit Steps 1 and 2 in this design template. You should make sure you save a copy of your work to your personal computer.

In Week 4, you are expected to submit Steps 3 and 4. Make sure that you include all four steps in that Week 4 submission.

The template will also be your guide as you integrate the content into the learning management system, Schoology.

The rubric for this assignment can be found on the assignment overview documents in Weeks 2 and 4 of this course.

Steps 1 and 2 are due at 11:59 p.m. on the seventh day of Week 2.

Steps 3 and 4 are due at 11:59 p.m. on the seventh day of Week 4.**Online Course Template**

Use the template below for your online course. The boxes will expand as you type.

**1. Needs Assessment**

Define the instructional or professional development problem. This can be accomplished through a needs assessment. When conducting a needs assessment, you can utilize test data, classroom/workplace performances, observations, surveys, and other documentation that will inform you of the actual problem.

**Designing for Classroom Use**

If you are creating your course for classroom use with students, use the following guide.

1. Use sources to determine area of students’ needs:

* TAKS scores
* District benchmarks
* Classroom performance
* Other relevant data sources

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| To determine the instructional need of students in the Computer Networking and Troubleshooting Technology program at Lamar Institute of Technoolgy I used the following:   * campus grade distribution report * test scores * student survey * instructor survey * personal experience |

2. What did the data tell you about your students as a whole?

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| Computer Networking and Troubleshooting Technology students at Lamar Institute of Technology have indentified networking address subnetting as the least understood concept in our program (CNTT survey, 2010). The results of the survey point to one class as the beginning of the struggle to understand all that they must to earn their Associate degree. This class is Cisco Discovery 2. The campus-wide Grade Distribution Analysis for the years 2005 through 2009 supports this finding in that they show the percentage of students earning a grade of C or better drops almost 5% after taking this class (2010). After plotting the test scores from my own class records for this class over the past 5 years I realized that the subnetting test scores are consistently the lowest scores of all tests given in the class (Arnold, course gradebook, 2010). In order to ascertain whether the low scores only existed in my classes I asked the other two instructors to perform the same examination, both had the same result (Arnold, CNTT Instructor survey, 2010).  All of the information also indicated that the students believe that even though our program has an extensive hands-on component they do not see the value of the time spent. One student commented, “I seem to spend a great deal of time sitting at a keyboard without knowing why” (Arnold, Understanding CNTT Concepts, 2010). Other issues indentified by the students were items such as the desire to build their own network for lab use, interest in a greater number of collaborative projects, and that the introduction of cross-curriculum assignments happen earlier in the program (CNTT survey, 2010).  Arnold, L. (2010). *CNTT Instructor Survey.* Available from <http://www.surveymonkey.com/s/KWSCDWN>  Arnold, L (2010). Course gradebook. Unpublished instrument.  Arnold, L. (2010). *Understanding CNTT Concepts.* Available from <http://www.surveymonkey.com/s/KWG2HP2>  Lamar Institute of Technology. *Grade Distribution Analysis* [Data file]*.* Retrieved on April 20, 2010, from <http://www.lit.edu/depts/institutionaldata/GradeD.aspx> |

3. What data did you use?

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| I created two surveys. One for the students to complete and one for the program faculty to complete. I used the student survey as the beginning point to indentify their feelings about the program. I then examined the campus grade distribution report and my course records to determine if I could find supporting evidence for the results of the student survey. At this point I created the survey for the other faculy members to determeine whether the trends that I found in my own classes only existed in my classes. I also drew upon my own experience. |

4. What Texas Essential Knowledge and Skills will be your focus?

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| Though I do not teach in a public school setting our program is offered on a public school campus as dual enrollment. Our course help achieve the following standards:  **126.22. Computer Science I (One Credit).**  **8b** The student is expected to demonstrate proficiency in, appropriate use of, and navigation of LANs and WANs for research and for sharing of resources.  **126.23. Computer Science II (One Credit).**  **8b** The student is expected to demonstrate proficiency in, appropriate use of, and navigation of local area networks (LANs) and wide area networks (WANs) for research and for sharing of resources |

**Resources**:

[NCLB Comprehensive Needs Assessment](http://txcc.sedl.org/resources/webinars/material/webinar2/NCLB_CNA_Manual.pdf)

[No Schools Left Behind](http://www.ctap4.org/data/documents/NSLBArticleBernhardt.pdf)

**Designing for colleague use**

If you are creating your course for professional development for faculty/employees, please use the following guide.

1. Use sources to determine area of faculty needs:

* Use the 21st Century Schools [Professional Development Needs Survey and Scoring Tool to determine area of faculty needs](http://www.21stcenturyschools.com/Assessing_PD_Needs.htm)

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Texas Distance Learning Association ([www.txdla.org](http://www.txdla.org)) HR Survey. Please find this survey under Resources

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2. What did the data tell you about faculty/employee needs?

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3. What NSDC standard will be your focus?

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National Staff Development Council (NSDC) [Standards](http://www.nsdc.org/standards/index.cfm)

[Guskey’s Five Levels of Evaulating Professional Development](http://www.davis.k12.ut.us/district/curric/social/hub/files/B64B62B5F4DF4B0FA2988243880401B2.pdf)

[E-Lead Evaluating Professional Development](http://www.e-lead.org/principles/evaluation.asp)

**2. Desired Results**

Stephen Covey describes this part of the design process as ***“to begin with the end in mind to start with a clear understanding of your destination. It means to know where you’re going so that you better understand where you are now so that the steps you take are always in the right direction."*** In this step, you will use your needs assessment to determine the learner outcomes, use your standards to determine what students/teachers/faculty need to know, and be able to do and develop your essential questions that will guide your assessments and activities.

**Unpacking the standard**

Based on your needs assessment and selection of the standard (TEKS or NSDC) that will address the problem, identify what the students/teachers/employees need to know and be able to do.

\*\*See Unpacking the Standards ppt in Resources\*\*\*

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| Students will know:   * Key terms – octet, bit, byte, Address Resolution Protocol, subnet mask, broadcast, multicast, unicast, Internet Protocol Adddress, dotted decimal, high order bit, low order bit, network ID, host ID * The different types of addresses used to allow for network communication * How convert from decimal numbers to binary and from binary to decimal * The layers of the Open System Interconnect (OSI) model   Students will be able to:   * Determine the subnet mask for a given network * Determine the network address for a given address * Determine the assignable address range for a network * Determine the broadcast address for a network |

**Describe your desired results:**

* Enduring understanding(s): “Big ideas” or the important understandings that we want students/teachers/employees to remember for life or beyond the classroom/workplace
* Essential question(s): What questions guide your teaching and engaging students/teachers/employees?
* Knowledge and skills: What do students/teachers/employees need to know (existing knowledge, new knowledge) and be able to do to ensure understanding of the content?

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| Enduring Understanding:   * Computer cannot communicate without proper addressing * Computers are grouped according to addresses to construct networks (LANs and WANs) * The proliferation of computers and computer networks has lead to a shortage of usable addresses * Dividing a large network into several smaller networks allows for a more efficient use of current address   Essential Questions:   * How many addreses are currently available for public use? * Are there any other ways to extend the number of addresses available? * Is a subnetted network designated any different from a non-subnetted network?   Knowledge and Skills:  *Students will know:*   * Key terms – octet, bit, byte, Address Resolution Protocol, subnet mask, broadcast, multicast, unicast, Internet Protocol Adddress, dotted decimal, high order bit, low order bit, network ID, host ID * The different types of addresses used to allow for network communication * How convert from decimal numbers to binary and from binary to decimal * The layers of the Open System Interconnect (OSI) model   *Students will be able to:*   * Determine the subnet mask for a given network * Determine the network address for a given address * Determine the assignable address range for a network * Determine the broadcast address for a network |

**Resources**

[Essential Questions](http://www.authenticeducation.org/bigideas/article.lasso?artId=53)

Unpacking the Standards (Found in Resources)

Chapters 1-4 ***Understanding by Design*** (Found in Lamar Library)

**3. Evidence of Understanding**

What is evidence of in-depth understanding? Where should we look and what should we look for in determining understanding? Checking for understanding requires more than one assessment type. It requires ongoing formative and informal assessment to achieve understanding.

According to Wiggins and McTighe, there is a difference between thinking like an assessor and thinking like an activity designer. Activity designers easily and unconsciously move from identifying the needs and essential questions to designing the learning activities without asking about the evidence that we need to assess for the desired knowledge and skills. In this step, you will create a rubric to determine understanding prior to developing learning activities.

This step utilizes Wiggins and McTighe’s six facets of understanding. In this step, you will determine what you will design to determine if students/teachers/employees have reached the required level of understanding.

**Rubric**

Develop a rubric that will be used to determine evidence of understanding. Use the Analytic Rubric for Understanding on pages 76-77 in *Understanding by Design* as a guide (Rubric is also located in Resources). Evidence of understanding should include performance-based and authentic assessments as well as formative and summative.

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Task(s)** | **Sophisticated** | **In-depth** | **Developed** | **Intuitive** | **Naïve** | | **Explanation** | Student produces accurate history, Project is thoughtful and inventive. Narrative is fully supported.  **(31-34 points)** | Student produces a history that goes beyond what is taught in the curriculum. Connections to content are subtle but detectable.  **(27-30 points)** | Student produces history that has some personalized ideas. Ideas are not supported by adequate evidence and argument.  **(23-26 points)** | Student produces incomplete history. Ideas that are presented have limited support.  **(19-22 points)** | Student produces fragmented history. Account lacks creativity and analysis.  **(0-18 points)** |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Task(s)** | | **Profound** | | **Revealing** | | **Perceptive** | | **Interpreted** | | **Literal** | | | **Interpretation** | | Student provides meaningful and powerful analysis of scenario. Explains how other interpretations might occur.  **(31-33 points)** | | Student provides a nuanced interpretation of the scenario. Student recognizes subtle differences in other possible interpretations.  **(27-30 points)** | | Student provides helpful analysis of the scenario and acknowledges that other interpretations exist.  **(23-26 points)** | | Student gives plausible analysis of scenario. Interpretation makes sense and provides some history.  **(19-22 points)** | | Student performs superficial analysis. Content is of what was taught or read from the text.  **(0-18 points)** | | | **Task(s)** | | **Masterful** | | **Skilled** | | **Skilled** | | **Apprentice** | | **Novice** | | | **Application** | | Student creates addressing scheme that is effective and efficient. Uses knowledge to adjust the scheme for the changing needs of the network.  **(31-33 points)** | | Student creates a competent addressing scheme that meets the demand of the given network. Provides for future growth.  **(27-30 points)** | | Student creates addressing scheme with limited adaptability for future growth.  **(23-26 points)** | | Student creates addressing scheme but needed coaching to complete the task. Limited personal judgment used.  **(19-22 points)** | | Student creates addressing scheme only after large amount of coaching and reteaching. Needed detailed script to complete task.  **(0-18 points)** | | |

**Resources**:

Chapters 5 and 6 *Understanding by Design*

Analytic Rubric for Understanding (Found in Resource section)

**4. Learning Activities and Teaching**

Develop the learning activities and teaching that will promote student/teacher/faculty understanding, interest, and excellence. While developing the learning activities, you will be required to include how technology (including assistive technology) will be integrated into your activities.

Use these guiding questions as you begin to develop your activities:

* How do the activities account for prerequisite or enabling skills required?
* Identify ways in which the instruction is designed to reach every student?
* Identify ways the activities provide opportunities to gather evidence from “work-in-progress.”
* How do the activities provide students an opportunity to “put it all together” (to see the big picture)?
* Do the activities provide students an opportunity to work with significant ideas and relationships that are included in the standards?
* Do the activities provide students an opportunity to construct their own knowledge?
* Do the activities stimulate higher order thinking and discussion?
* What technology is being integrated into the activities to meet the needs of all students? (Assistive technology)
* What will be the hook to ENGAGE students?
* What will the students be doing to learn? (EXPLORE)
* What instructional strategies will be used to teach this lesson? (ELABORATE)
* What level of learning will be taking place?
  + Recall, Comprehension, Application, Analysis, Synthesis, Evaluation
* What activity will EXTEND student learning?

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| I have created three assignments in my online course. The order of the assignments will help to walk the class through the content in a logical manner. Each assignment will build on the information learned in the one before. The nature of the assignments will require the students to use industry vocabulary and to use skills learned either in earlier in this course or in other courses. The topic I have selected is taught about six weeks into the second semester of an Associate degree program. The format of the assignments also prepares the students for a course that is taken later in which a large portion of the work is in the form of case studies that will have more than one possible correct solution.  The following is the lesson plan for the chapter being covered in the online course.  Monday: (The Hook)   * Open discussion on IPv4 addressing to determine students general knowledge level   + Listen for and encourage industry vocabulary * How many numbers do computers really know?   + Just two. They only understand two conditions, on (1) and off (0)   + Review conversion of decimal to binary and binary to decimal * Set up the first assignment:   + When did computer networks really begin? How were messages sent in the early days? How did we get to where we are with respect to network addressing?   Wednesday:   * Discussion   + What is the purpose of network addressing?   + OSI Layer 2 addresses vs. Layer 3 addresses   + What can we learn by examining the network address scheme of a network?   + What would cause a company to restructure its addressing scheme? * Address classes * What are the parts of an IP address? How do we identify those parts?   Friday:   * Using subnetting to better manage a network * Build the rules for subnetting * Practice, practice, practice   + Get the students to present problems for the class to solve   + Play “Stump the Class” – Work through a subnetting scenario and then ask numerous questions that can be answered from the information on the board so that students begin to see different approaches that end with the same result |

**Resources:**

Chapters 7-11 *Understanding by Design*

Assistive Technology

Universal Design for Learning