**Supplemental Digital Content, Table 1. Universal Design for Learning Guidelines6**

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| **Engagement** | **Representation** | **Action & Expression** |
| Self-Regulation  Optimize motivation  Facilitate coping skills  Develop self-assessment/reflection | Comprehension  Background knowledge  Highlight patterns, critical features, big  ideas, relationships  Information processing, visualization,  manipulation  Maximize transfer and generalization | Executive Functions  Appropriate goal setting  Planning and strategy  development  Monitoring progress |
| Sustained Effort and Persistence  Salience of goals and objectives  Vary resources to optimize challenge  Foster collaboration and community  Increase mastery-oriented feedback | Language, Mathematical Expression,  Symbols  Clarify vocabulary and symbols  Clarify syntax and structure  Support decoding text, mathematical  notation and symbols  Promote understanding across  languages  Illustrate through multiple media | Expression and Communication  Use multiple media for  communication  Use multiple tools for  construction and comparison  Build fluency to support  practice and performance |
| Recruiting Interest  Optimize choice and autonomy  Optimize relevance, value,  authenticity  Minimize threats and distractions | Perception  Customize display of information  Alternatives to auditory information  Alternatives to visual information | Physical Action  Vary response and navigation  Optimize access to tools and  assistive technology |